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NEW YORK, SATURDAY, MAY 9, 1925

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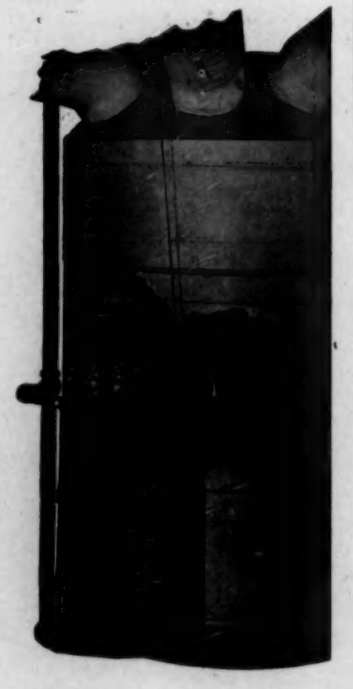
BRIDGEPORT, CONN.

SEP 30 1925

Index to Contents, Page 3

Advertising Index, Page 21

# What the City of Duluth Thinks of the Franklin Burner



*Showing Installation in Warm Air Furnace*

The biting wintry blasts that sweep across Lake Superior from the frozen Canadian border, have no terrors for this Minnesota City, whose homes are equipped with Franklin Burners.

The rigorous climate in this far-north country is a most severe test of gas heating equipment. Note carefully what the City Department that knows has to say of the Franklin Burner:

**"We use the Franklin Quick Removable Gas Burners at various places on our gas systems. Some have been installed for several years. They have been very satisfactory in their operation. Many of our consumers operate them during the entire cold weather period. We have found the Franklin Gas Burner to be practical, economical and worthy of our unreserved endorsement.**

**"(Signed) R. A. CASSON,**

**"Department Superintendent,**
**"Duluth Water & Light Department."**

The particular advantages of the Franklin Burner are its ease and low cost of installation, cleanliness, economy, convenience. It can be installed in any hot water or steam boiler, or warm air furnace of any type. The Quick Removable feature permits the burners to be removed and reinstalled in a minute's time without the use of tools.

*No. 3*
*System with Thermo Valve and By-Pass*

When cities and individuals freely endorse this much needed appliance (there are over 102,000 in use), it makes selling easier. The wide-awake Gas Company will take quick advantage of this opportunity to increase their sendout and reap the profits from this wonderful burner that permits the use of gas or coal alone, or in combination.

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**FRANKLIN GAS BURNER MFG. CO.**

Vine and Mitchell Avenues CINCINNATI, OHIO

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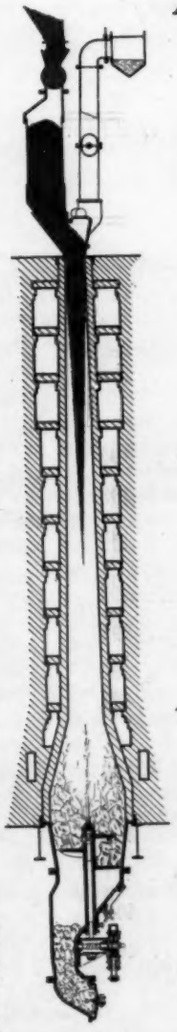
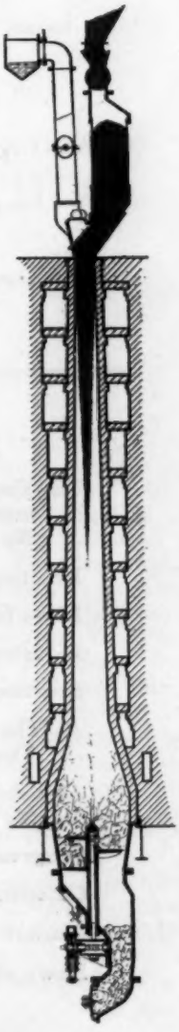
# *Vertical Retorts*

## American Installations



**Fitchburg, Mass.**
**Springfield, Mass.**
**Pawtucket, R. I.**
**Portland, Me.**
**Ottawa, Ont.**
**Montreal, Que.**
**Fitchburg, Mass.** (Repeat)
**Pernambuco, Brazil**
**Santos, Brazil**
**Montreal, Que.** (Repeat)
**Vancouver, B. C.**
**Victoria, B. C.**
**Montreal, Que.** (2nd Repeat)
**Watertown, N. Y.**
**Malden, Mass.**
**Vancouver, B. C.** (Repeat)
**Toronto, Ont.**
**Portland, Me.** (Repeat)
**Buenos Aires**
**Santiago, Chile**
**Fargo, N. Dakota**



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*36,000,000 Cu. Ft.*

## WEST GAS IMPROVEMENT CO.
## *of America, Inc.*

441 Lexington Ave. Near Grand Central Terminal **New York**

# American Gas Journal

*SIXTY-SIXTH YEAR*

*Published Weekly by American Gas Light Journal, Inc., 53 Park Place, New York, N. Y.*

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*"MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS"*

## *Contents of This Issue*

**The Fuel of the Future—What Shall it Be? XXI. Heat Treatment of Metals Hardening Calculations** ..... 389
**By Ismar Ginsberg**

**Erecting a Gas Holder—By A. F. Davey** ..... 392

**Ideas for the Man Who Sells—By William H. Matlack** ..... 393

**Industrial Gas Lesson No. 69** ..... 395

**Securing New Business—By P. J. Naschold** ..... 396

**As The Journal Views It** ..... 397
**The Gas Holder**

**Adjustment of Economic Situation Indicated** ..... 398
**By L. W. Alwyn-Schmidt**

**Progress in Gas Technology** ..... 399

**Catechism of Central Station Gas Engineering, Installment 69** .. 401

**Market Report** ..... 408

**News of the Gas Industry** ..... 409

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# The Fuel of the Future

## XXI. Heat treatment of metals—Hardening calculations

*Ismar Ginsberg*

IN the previous article a detailed description was given of a distinct application of heat treatment. The problem in that case was the use of gas in the hardening of steel saws. It was shown how the gas engineer developed his problem and finally succeeded in solving it to the satisfaction of the manufacturer. The general method that was outlined in that article is one that has to be followed in most any kind of installation where it is desired to supplant some other fuel by gas. It necessarily entails a great deal of time and expense, but it must be remembered that the customer, once secured in this manner, remains a customer indefinitely as long as he is given service. There is no question but that the undertaking is worth while and, furthermore, there is equally no doubt that the only way in which to tackle these industrial gas problems is along these lines.

### Necessity for Thoroughness

The gas engineer engaged in the sale of gas for industrial purposes must be thorough. He must be prepared to spend a great deal of time in studying the conditions existing in the manufacturing plant. The electrical man does it and in order to compete with him the gas man must follow suit. A haphazard survey of the manufacturing process will not produce the desired results. Sometimes, of course, the problem is fairly simple, or the gas company may have information in its files that makes it possible for it to solve the problem without much preliminary work. But in the majority of times the conditions in the manufacturing plant are peculiar to it and the solution of the problem and the successful supplanting of another fuel by gas require careful consideration of all details. When the proper investigation is made and the necessary time is spent on the problem, there is no question but that nine times out of ten the gas engineer will be able to solve the problem to the satisfaction of the manufacturer and gas will be welcomed in place of the fuel usually employed. The files of gas companies who have gone in for industrial business are replete with cases of this sort. But the installation of an improperly designed gas furnace or the overcoming of prejudice against the use of gas by mere argument, in place of substantial practical results, will, as a rule, be far worse than making no attempt at all to get the business. The heating business must be obtained in such a manner that the customer is not only satisfied at the outset but remains satisfied after he has had an opportunity to think over his action. This is the real test of any sale and even more so in the case of a sale of industrial gas.

With these thoughts in mind, we leave the general phase of metal treatment by gas to take up the important matter of the calculation of the amount of gas that will be required to produce a certain result, as far as hardening is concerned. The same example is selected for this purpose as was described in the former article, namely, the hardening of saw blades.

### Details of the Operation

The details of the operation were as follows: The blades varied in length from six inches to one foot. The temperature that was required in the hardening process was 1,450 degrees F. The output of blades per day was 500 gross. At any rate, this was the desired approximate output. As has been stated before, the saws were heated in tubes or pipes, and these pipes were pushed through the furnace in a

manner which is similar to that used in the three-inch shell furnace, which is a standard type of hardening furnace.

The tubes themselves were 13 inches long and one and one-half inches in diameter. Each pipe weighed four pounds. These tubes each held 100 saws and the weight of these hundred saw blades was four and one-half pounds. It is interesting in this case to note that the extra weight of metal which had to be heated up was almost equal to the weight of the saw blades themselves. This in ordinary cases would mean a very poorly designed process, for about half of the heat will go to waste in raising the temperature of other metal besides that which is being hardened. However, in this particular case, it was essential to carry out the process in this manner because of the peculiar nature of the metallic object that was being hardened. There was no other way in which the saw blades could be handled as readily as by placing them in pipes, and in spite of the fact that double the weight of metal had to be heated under these conditions, it was necessary to carry out the process in this fashion.

It may, however, be suggested to the industrial gas salesman that many times he will have a great opportunity in effecting savings while introducing his fuel in an industrial process by watching out to see how much extra weight of metal is heated in addition to the metal articles themselves. A reduction in the weight of the extra weight of metal can most always be effected by the use of a properly designed heating furnace.

**Further Details of Calculation**

The total number of saw blades that must be treated in a day is then 144 multiplied by 500, or 72,000 blades. This will then mean that there will be required for these blades 720 tubes each day. It is assumed that the tubes full of saws will reach the proper temperature within a half hour's time. This is a figure which is obtained by observation of the operation of the furnace and by making proper deductions for the heating effect of gaseous fuel in the experimental furnace. A furnace is assumed to have dimensions of 5 feet 6½ inches in length, inside measurement. The saws are pushed forward every six minutes and therefore 100 saws will be produced every six minutes or 1,000 saws in one hour and 24,000 saws in one day. Hence, in order to obtain the desired production of 72,000 saw blades every 20 hours, it will be necessary to have three rows of tubes across the width of the furnace.

Inasmuch as the tubes will move out of the furnace every six minutes at the rate of three at one time, that means that in every hour there will be produced $60 \div 6 \times 3$, or 30 tubes. This is equivalent to a total output of 3,000 saw blades per hour for the furnace. The weight of the tubes themselves is $30 \times 4$, or 120 pounds, and the weight of the saws that are contained in them, 3,000 in all, is $\frac{3000}{100} \times$

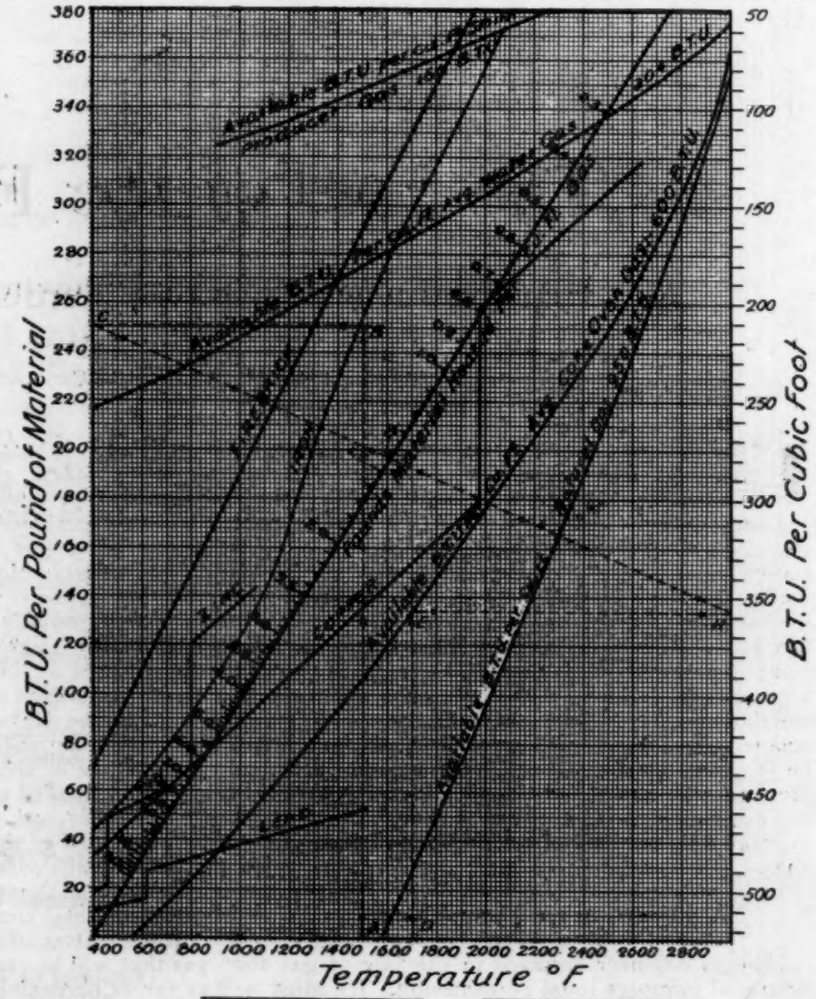



*Fig. 1. Composite Curves*

4.5, or 135 pounds. This gives a total weight of metal that must be heated of 120 + 135, or 255 pounds.

### Gas Required to Heat the Metal

The amount of gas that will be required to heat the material is found by first determining the total quantity of heat that is in the metal at a temperature of 1450 degrees F. This will be remembered to be the temperature to which the metal must be heated in the furnace. In order to do this it is, of course, possible to establish formulas and work the problem out algebraically. However, an easier method is to employ the curve sheet, figure 1, which accompanies this article, and which contains a variety of information that is very valuable to the industrial gas engineer who is called upon to make calculations on the amount of heat required to carry out various heat treating operations with the aid of gaseous fuel.

### Description of Curve Sheet

This curve sheet is of such importance and as it will be used in other examples of heat treating calculations as well, it was considered that a thorough explanation will not be out of place at this point. There are four scales in this diagram. The right-hand scale indicates the British thermal units of heat that are present in the products of combustion. The left-hand scale indicates the amount of heat in British thermal units that is required per pound of material treated. The horizontal scale is a temperature scale in degrees F. The fourth scale is an oblique scale which shows the pounds of material heated per cubic foot of gas used.

Various curves are shown in this diagram giving the available heat units in the form of potential heat energy per cubic foot of the gas. Thus there is a curve for natural gas at 950 British thermal units, one for coke oven gas at 600 British thermal units per cubic foot, one for water gas at 304 British thermal units per cubic foot. These curves are drawn between the temperature scale and the right-hand scale of B.t.u. per cubic foot of combustion gases.

There is another series of curves which are marked respectively, firebrick, iron, zinc, tin, copper, lead. These are drawn between the bottom scale and the left-hand scale.

### Using the Curve Sheet

The following procedure is followed in using this curve sheet: Suppose the working temperature of the furnace is 1,500 degrees F. This point is then located as point A on the temperature scale. A line is run up vertically from point A until the iron curve is hit. It is assumed in this case that the material being heated is a mass of iron. Then from the point B, which marks the intersection of the vertical line and the iron curve, a horizontal line is run across to the left-hand scale. This line intersects the ordinate scale at the left at the point C. This is seen to be 250 British thermal units per pound material. In other words, the total heat in the metal at the indicated temperature of 1,500 degrees F. is 250 B.t.u.

It is also assumed that the flue gas temperature is 200 degrees higher than the working temperature, which is a fair assumption. In other words, the temperature of the products of combustion leaving the furnace must be 1,700 degrees C. This temperature is located as point D on the temperature scale. A line is run vertically upward from that point until it reaches the coke oven gas curve, it being assumed that this is the gas that is being used in the furnace. The intersection of these two lines is indicate das E. From that point a horizontal line is run across to the right-hand scale, intersecting it at the point H, which is seen to be close to 360 B.t.u. per cubic foot. Point C is then connected with point H and the intersection of this line with the oblique scale is read off to be 1.44 pounds per cubic foot of gas. In other words, under the conditions that have been noted, each cubic foot of gas will heat up 1.44 pounds of iron to the desired working temperature.

### Use of Curve in Present Example

This curve diagram is used in the present example. The temperature in the given case is 1,450 degrees F. This temperature is first located on the bottom scale, the temperature scale. By projecting a vertical line upwards from that point until the iron curve is intersected and then running across horizontally from that point, the left-hand scale is struck at a point which indicates 240 British thermal units per pound of iron as the total heat that is contained in the mass of iron, represented as hack saw blades at the temperature of 1450 degrees F.

Inasmuch as the total quantity of metal that is heated in an hour's time is 255 pounds, the total quantity of heat represented in this mass of metal becomes equal to 255 × 240, or 613,000 British thermal units, per hour. This is the total amount of heat that is absorbed.

### Supplying the Required Heat

The available heat must be derived from the products of combustion of the gaseous fuel or the flue gas. The temperature of the flue gases will, of course, depend on various factors, such as the rate of combustion and flame propagation, the calorific power of the original gas, etc. Inasmuch as the working temperature within the furnace is 1,450 degrees F., it is necessary that the gases of combustion leave the furnace and enter the stack with a temperature at least as high as that. It is better to assume a temperature for the flue gases which is a little higher than this figure of 1,450 degrees F. in order to make sure that the proper working temperature is attained and maintained in the furnace. Accordingly, in this case a flue gas temperature of 1,500 degrees F. was assumed.

(Continued on page 406)

# Erecting a Gas Holder

## A description of one particular installation

*A. F. Davey*

Manager, Wisconsin Public Service Corporation, Sheboygan, Wis.

DURING the four-year period from 1920 to 1924, the sendout from the Sheboygan plant of the Wisconsin Public Service Corporation increased from 130,000,000 cubic feet per year to almost 260,000,000 cubic feet per year, or just about double. Part of this increase was made possible through the linking together of small cities near Sheboygan with a high pressure line, but by far the largest part was due to the increase in the city of Sheboygan itself.

The high pressure line which extends west from Sheboygan at the present time is about 16 miles long and serves Kohler, Sheboygan Falls and Plymouth, a total population of about 7,800 people.

The gas plant at Sheboygan, although having plenty of manufacturing capacity, was limited for storage, the maximum daily sendout being over 900,000 cubic feet and the storage holders being of 200,000 cubic feet capacity, with a 50,000 relief. On peak days the six-hour sendout from 6 a. m. to 12 noon was between 400,000 and 500,000 cubic feet. Therefore, it became necessary to increase our storage facilities. In most cases this would have meant simply to determine the location either in the plant property or across the street. In our case, due to limited yard space and inability to secure additional land except at exorbitant prices and only for temporary relief, say five or ten years, it meant locating at an entirely new site with sufficient land for future developments; in other words, find an entirely new location.

### Sinking a Test Shaft

As soon as the holder location was decided upon a shaft was sunk in the center to observe soil conditions and determine the average length of pile required for the foundation. It was necessary to excavate down to the average water line, a distance of about four feet, where gravel was reached. In addition to the shaft, a bar was driven down at five or six different points to see if there was any variation in the depth to rock.

The job of excavating was let to a local contractor. At the start of this work the contractor encountered a great deal of water and it was necessary to rig up an electrically driven centrifugal pump to take care of this water. This pump was run almost 24 hours a day.

Before the entire work of excavation was finished the weather turned extremely cold. The frost was down three or four feet, which made completion of this work very difficult.

### The Foundation

After the excavation was completed the work was left until spring. Early in the spring the job was let to a contractor for putting in the piles and foundation work. As this location was out of the city, it was necessary to extend the city water lines. A two-inch line was laid directly from a hydrant at the city limits on top of the ground to the excavation, a distance of about 1,800 feet. It was also necessary to extend the electric lines about 3,000 feet.

A portable crane, equipped with a half yard clam shell bucket was used, first to unload the equipment from cars and to assist in the setting up. Later it was used for excavating in the two wells for inlet and outlet connections, and then for loading the concrete materials into the hopper.

The pile driver was a turntable rig with leaders 54 feet in height and was equipped with double driven steam hoisting engine and a Vulcan steam pile hammer. A 40-horsepower boiler furnished the steam. For shipment the pile driver had to be completely knocked down in order to get it on flat cars.

### The Piling

There were driven 1,304 pieces of piling, a total length of 34,100 lineal feet. Driving was very hard, the subsoil being gravel, and the driver averaged about 35 pieces a day. Wood piles, mostly maple and elm from Northern Wisconsin, were used, they being highly satisfactory for ground water conditions such as were found at this site. Where a wood pile is cut off at such an elevation as to be below ground water level, and, therefore, always submerged, its life is indefinite. Concrete piles would have been just as satisfactory as wood at this location, but they would not have been more so, and as the cost was about four times as much, we could not see how their use would be justified.

The great problem in the driving of the pile on this work was taking care of the ground water, or we might better say the mud made by the ground water. The crew for most of the time on the pile driving was wallowing around in thick, sticky mud, which the constant rain made it impossible to get rid of. It was hard to keep men on this job on account of these connditions and men were being hired each day to take the place of those leaving.

It was expected the foundation work would be completed by May 1, but due to the loss of time caused by the great amount of rain, together with the hardship in keeping men on the job, the work was not completed until July 1.

The delay in completing the foundation work necessitated a rearrangement of the holder contractor's field men and held them back two or three weeks

(Continued on page 403)

# GAS MERCHANDISING

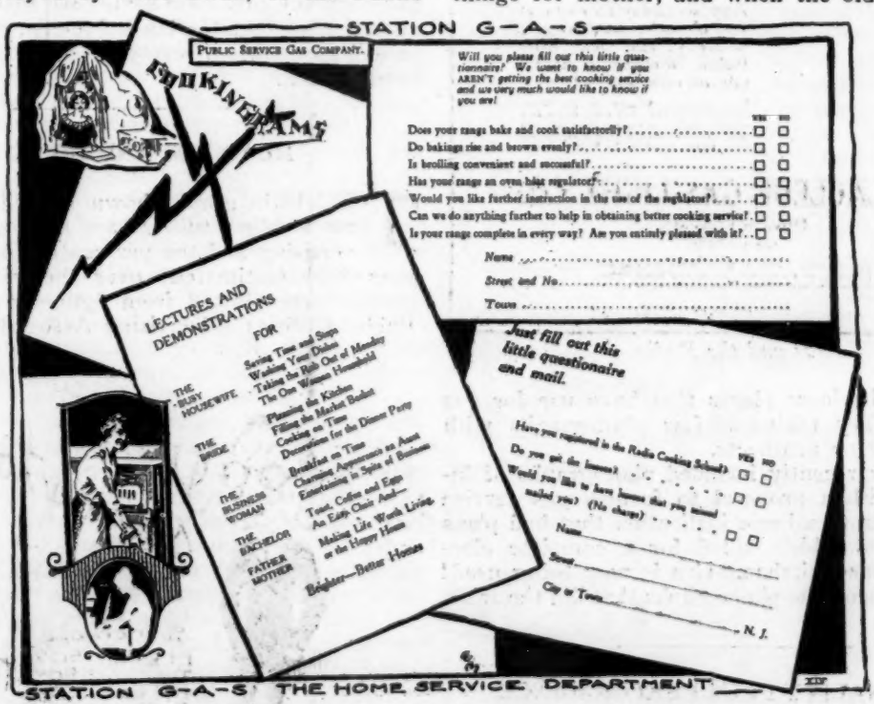
*Domestic – Industrial*

# Ideas for the Man Who Sells

*William H. Matlack*

## BROADCASTING BETTER COOKING

GAS companies here and there are going in strong for broadcasting to tell the home managers how to solve that everlasting problem: "What will we have for dinner today?" The direct advertising illustrated on this page indicates one of the ways employed by Miss Swan, of the Public Service Gas Company of New Jersey, to interest women in her "radio cooking class," while the newspaper advertisement reproduced shows how Miss Wethrell, of the Laclede Gas Company, St. Louis, is enlisting new members to her radio class in cooking.


STATION G-A-S
PUBLIC SERVICE GAS COMPANY
Will you please fill out this little questionnaire? We want to know if you AREN'T getting the best cooking service and we very much would like to know if you are!
Does your range bake and cook satisfactorily?
Do bakings rise and brown evenly?
Is broiling convenient and successful?
Has your range an oven heat regulator?
Would you like further instruction in the use of the regulator?
Can we do anything further to help in obtaining better cooking service?
Is your range complete in every way? Are you entirely pleased with it?
Name
Street and No.
Town
LECTURES AND DEMONSTRATIONS
FOR
THE BUSY HOUSEWIFE
Saving Time and Steps
Washing Your Dishes
Taking the Rub Out of Monday
The One Woman Household
THE BRIDE
Planning the Kitchen
Filling the Market Basket
Cooking on Time
Decorations for the Dinner Party
THE BUSINESS WOMAN
Breakfast on Time
Charming Appearance on Arata
Entertaining in Spite of Business
THE BACHELOR
Toast, Coffee and Eggs
An Easy Chair And—
FATHER MOTHER
Making Life Worth Living
or the Happy Home
Brighter—Better Homes
Just fill out this little questionaire and mail.
Have you registered in the Radio Cooking School?
Do you get the lessons?
Would you like to have lessons that you missed mailed you? (No charge)
Name
Street
City or Town
N. J.
STATION G-A-S THE HOME SERVICE DEPARTMENT

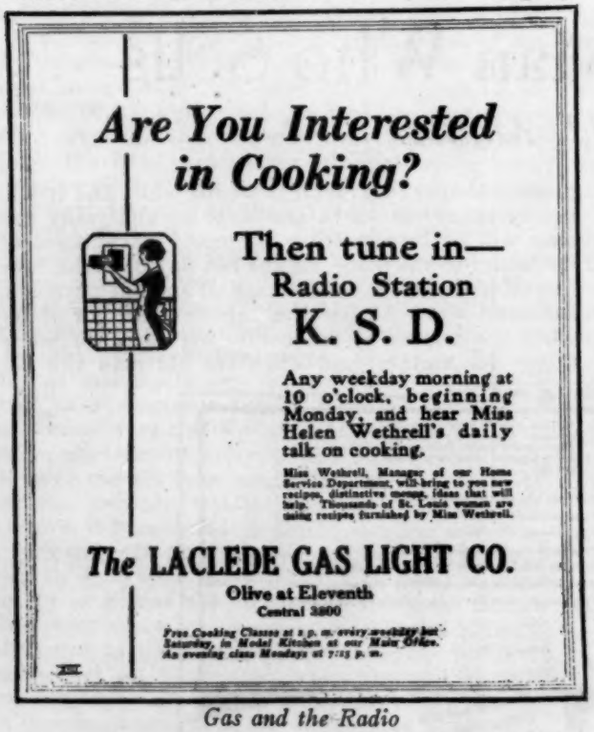
With one or two more stations broadcasting menus and recipes daily, it will be but a very short time until women the country over will depend on the gas companies, not only to furnish the fuel for cooking purposes, but to tell them what to have for dinner tomorrow. This is mighty good advertising and mighty good work. Anything that helps the home manager in general is worth while and it will not be many moons before some up-and-going gas man will be broadcasting the many advantages of hot water in the home, on the run day or night, how helpful hot water is for a thousand and one purposes, for baby when he has the tummy-ache, for sister when she wishes to redecorate her face, for many things for mother, and when the old man and the boys wish to break down the bristles and, oh, for health and hygiene generally.

## PHOTOGRAPHS AS STIMULATORS

IT has been our experience that the prospective customer is always interested in what his neighbor is doing and, while it is always possible to say, "The Gem people have an all-gas kitchen, etc., etc.," the idea that the prospect should keep up with other establishments in the same line of business that he is in sinks in quicker if you produce a photograph of an actual installation and say, "Here is the all-gas kitchen of the Elite Cafe."

The woman in the home is just as susceptible to this method of selling as the business man, the psychology being that it's the nature of man to want what the other fellow has.

A few good photographs of model kitchens will help you materially in many ways, with here and there an outside view of the home in which the kitchens have been installed. The same thing applies to the business places that have use for gas appliances. Try taking a few photographs with you in calling on prospects.


Are You Interested in Cooking?
Then tune in—
Radio Station
K. S. D.
Any weekday morning at 10 o'clock, beginning Monday, and hear Miss Helen Wethrell's daily talk on cooking.
Miss Wethrell, Manager of our Home Service Department, will bring to you new recipes, distinctive menus, ideas that will help. Thousands of St. Louis women are using recipes furnished by Miss Wethrell.
The LACLEDE GAS LIGHT CO.
Olive at Eleventh
Central 3800
Free Cooking Classes at 2 p. m. every weekday but Saturday, in Model Kitchen at our Main Office. An evening class Mondays at 7:15 p. m.

*Gas and the Radio*

This writer recently included photographs of installations with a proposal to furnish gas service and appliances to a large institution that had plans already drawn which called for a complete electrically equipped kitchen. Gas is now being used! It may have been the photographs that did the trick.

## PERSONALITY PLUS PERFORMANCE

WE know a man who sells appliances in competition with a whale of a big corporation and organization as a rival. This man's shop is off the beaten trail of business. He has a show room that looks like a second-hand store and he does most of the work himself, that is, he is on every job. But his personal work is not what puts him over. It's his personality, his performance! Somehow he gets things done, and even when his men mess things up a bit and seem to take a little more time in doing the job than is reasonably necessary, when he comes on the job all is forgotten. It's his personality—he has a word for everyone and everyone has a word for him and somehow, no matter how rushed the customer is to get the job done, no one seems to resent his "eternal talking" when he gets on the job. Everyone says he's a fine fellow, or he has such a pleasing personality.

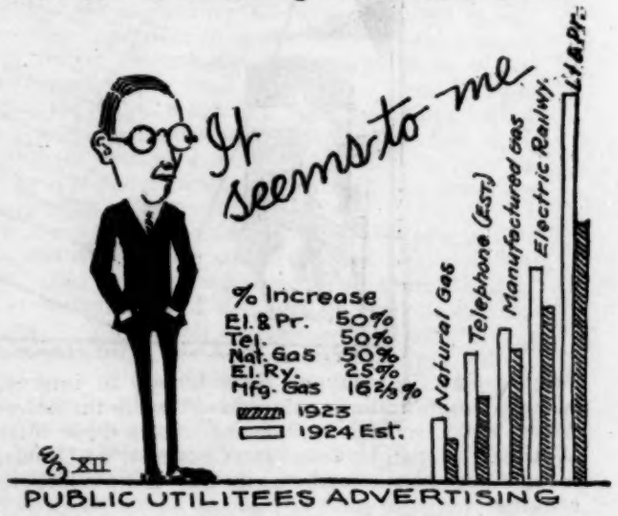
## "NO SMOKING"

THE other day we were on a street car when a uniformed man from the gas company got aboard and took a seat just in front of our's. The car was crowded. It was a day when the windows all were down. There was a big blue and white

enameled sign in both the front and rear ends of the car, "No Smoking," it said. And the man in the gas company's uniform seated next to a woman was puffing away on a big black five-cent cigar—a "wishbone," no doubt. Don't you hate to inhale second-hand smoke?

## READ 'EM AND GO TO IT

THE little graph shown here illustrates what the Public Utilities have been spending in advertising and the per cent of increase for the year 1924 (estimated) over the year 1923. The graphs were plotted from figures compiled by the Public Utilities Advertising Association and, while




they show a decided increase in all branches, it seems to us that Manufactured Gas should not be at the bottom of the ladder, spending less for advertising than a number of manufacturers whose product sells at five cents per unit, less than you can take a street car ride for, when gas service and gas appliances go so far toward making a house a home.

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

# Lesson No. 69

## Heat and Change of State

### Change of Volume During Fusion

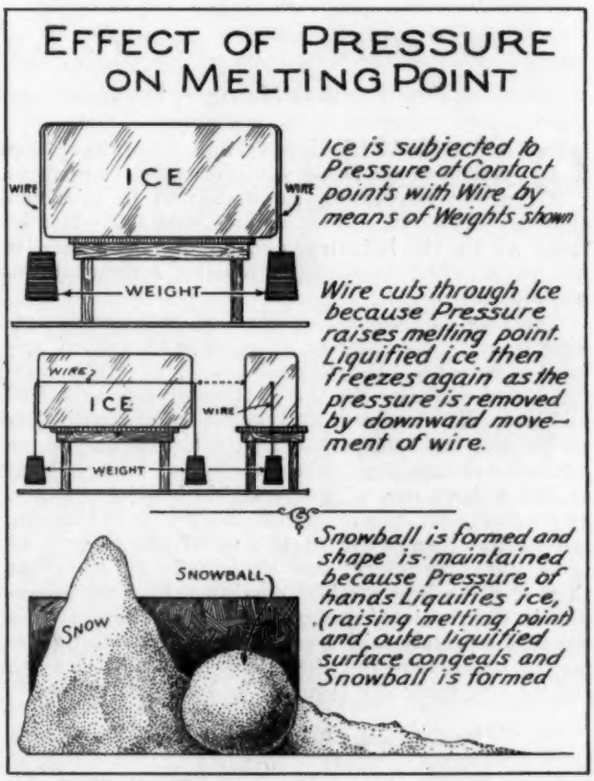
An important phenomenon which takes place during fusion is the change in volume. When designing apparatus in which melting operations are performed, the fact that the metal which is going to be melted will increase in volume, when it is converted into the liquid condition, must be taken into consideration. Generally most substances expand when they are melted and contract when again they solidify. The solid is hence denser than the liquid portion of the metal or substance, that is, possesses a higher specific gravity, and therefore in a mixture of the two phases of the substance the solid will sink to the bottom.

There are, however, exceptions to this rule, the notable ones being water, bismuth, cast iron and type metal. It has already been described in these lessons what relation exists between the temperature and the state of water and how the ice that is formed from water by the lowering of the temperature below the freezing point, 32 degrees F., floats on the surface of the water because of the lower density of the ice in comparison with that of the water. In other words, when water changes into ice the volume of the solid is greater than that of the liquid water. The expansion of ice in freezing is of great importance from the standpoint of water pipes, the life of fishes in streams and ponds, etc. The fact that iron and type metal expand during solidification is of importance in the casting of these metals in molds, as the solidified metal will then bear an exact reproduction of the mold.

There are a number of good examples of the effect of pressure on the melting point of ice which illustrate well how the melting point is affected. For example, in making a snowball, the snow is scooped up with the hands and molded into a ball by the pressure of the hands. The increased pressure of the hands lowers the melting point of the snow and allows it to form into a ball. The snow at the exterior of the snowball is actually changed into water and when the pressure of the hands is released the water freezes again and a firm mass of snow is obtained.

### Cutting Through Ice with a String

Another good illustration of how it is possible for mere pressure to lower the melting point of ice, so that the ice which exists as such under ordinary pressure cannot be maintained in the solid condition under the excess pressure that is applied to it, and hence melts, is given in the following: Take an ordinary cake of ice and hang over it a string to which weights are attached at either end. The arrangement may be seen in the accompanying illustration. A certain amount of pressure is exerted by the string at the points where it comes in contact with the ice. The result is that the pressure at those points is sufficient to lower the melting point of ice to such a degree that the water can no longer exist in the solid condition, but is converted into the liquid state.


EFFECT OF PRESSURE ON MELTING POINT
ICE
WIRE
WIRE
WEIGHT
Ice is subjected to Pressure at Contact points with Wire by means of Weights shown
WIRE
ICE
WIRE
WEIGHT
Wire cuts through Ice because Pressure raises melting point. Liquified ice then freezes again as the pressure is removed by downward movement of wire.
SNOWBALL
SNOW
Snowball is formed and shape is maintained because Pressure of hands Liquifies ice, (raising melting point) and outer liquified surface congeals and Snowball is formed

What then happens is that the string actually cuts a passage for itself through the cake of ice. Then

as soon as the pressure on the ice at the points of contact with the string is relieved by the latter passing through the watery film, produced by the melting of the ice, the water freezes again, for the reduction in the melting point of the ice no longer prevails. There is obtained in this manner the curious sight of a cake of ice through the center of which there is a string with weights on either end. The reason why this takes place is, however, easy to understand when the effect of the increase of pressure on the melting point of a substance which has a greater volume in the solid than in the liquid is taken into consideration.

### Conclusion

Before leaving this subject it must be brought to mind once more that the application of pressure to a solid which is being melted will tend to raise the temperature at which it is converted into a liquid when the change from solid to liquid state is accompanied by expansion, and it will tend to lower the melting point of the solid when the change from solid to liquid is accompanied by contraction. It is evident that in one case the pressure tends to help the contraction of solid to liquid and in the other case to hinder the expansion of the solid to the liquid When this matter is considered from the light of change of solid to liquid, the solidification point of the liquid is raised by the application of pressure when the change from liquid to solid is accompanied by expansion, but is lowered when it is accompanied by contraction.

# Securing New Business*

## A description of a sales plan and a cost analysis

*P. J. Naschold*

New Business Manager, Rockford Gas Light & Coke Company, Rockford, Illinois

CONSIDERABLE thought and action have been expended on these subjects, sales campaigns, group canvassing remuneration to salesmen, time payments, etc. Yet, contact with the salesmen from within the industry, and not by these men to the public only, has been, I believe, somewhat neglected.

The Gas Appliance Salesman of today compares equally with the higher type of salesman of any kind of industry. He is human, requires human handling and dealing. In the past when gas as a fuel and illuminant was new and people were skeptical as to its use, the salesperson was active mostly in an educational capacity. The training of householders to the proper use of gas was his big job. Later, after this educational period, he was a Salesman, not in the true sense of the word but merely an order taker or clerk, due principally to the "less than cost" selling method employed by the companies in the resale of gas consuming appliances. His work was merely taking orders from a market waiting to be served, and the more shoe leather worn out by him naturally resulted in increased orders.

### Promiscuous Sales of Appliances

During the period of the past "World War" the appliance sales activities were curtailed naturally, and in many cases disposed of by many utilities. This was caused by the inability to get rate increases commensurate with the increased cost of commodities necessary for the manufacture of gas, and which in many cases made it necessary to sell "gas" at a loss, and, therefore, the stopping of sales activities. This also developed a condition in sales relations that brought to the utilities a serious question to be considered later, namely, the promiscuous sales of cheap, inefficient, improperly constructed and assembled gas appliances by nearly every plumber, hardware store, department store and appliance company, whose sole interest was in profit and not in making a satisfied gas consumer, at the same time increasing to a tremendous degree the service expense to the utility company, besides dissatisfying its consumers.

### The Asset of "Service"

The present time brings us back again to the need of sales people efficiently trained, with a thorough knowledge of appliances, properly sold, properly connected, and the proper appliance for each individual condition, and this, with a sound business view of satisfying again the public and selling through the appliance, its installation, etc., the big business asset ever becoming more cognizant to us—"Service."

Now Service, not the mechanical, but the psycho-

(Continued on page 404)

*Presented before the 1925 Convention of the Illinois Gas Association.

# As The Journal Views It

## THE GAS HOLDER

To the gas man the gas holder is a piece of apparatus which is absolutely essential to the manufacturing process, an apparatus which entails considerable expense, not only in initial cost, but in the maintenance and upkeep. The gas man is not accustomed to look upon the holder in any other manner but as a utility that he must have in order to serve his community properly with gas. On the other hand, to the individual who lives near the gas works or near sub-stations where holders are erected, the gas holder is generally in his mind a detriment to the neighborhood, a nightmare in steel and a blot on the landscape.

In a certain sense the individual is not to be blamed, for he does not understand at all the purpose of the holder. He is selfish, of course, in that, when he is made to understand why holders are necessary, he is inclined to say, "Let the gas company erect it somewhere else, where I cannot see it." On the other hand, the agitation that generally arises when the gas company plans to erect a holder in a new neighborhood is altogether unfair. Every now and then the newspapers contain detailed accounts of such objections.

It would be well for the gas company not to pass by these objections without giving them attention or attempting to make clear its position to the objectors. It must show them that the gas holder is not being erected because the gas company has an unholy desire to destroy landscape effects and injure the esthetic feeling of those who live in the neighborhood.

It should be pointed out to these objectors that the gas holder is being erected for their benefit and for their benefit only. They should be made to see that the gas company cannot give good service without having gas holders, and that the gas company does not go to such an expense without being mighty sure that it is necessary. They should be made to understand that the gas company is looking out for their interest solely in erecting the holder and that if they want to have good service they must have the holder, and if it does detract somewhat from the beauty of the scenery it cannot be helped.

On the other hand, gas companies should endeavor to make the holder as presentable as possible, to keep it always painted and looking as attractive as it can be. This is not an entirely easy matter, but it can be done. In fact, the gas company should pay some attention to the general appearance of the gas works and try to make it look as pleasant as possible. This can be done at very little expense with the aid of flowers and shrubbery.

Furthermore, the gas company must realize, and in the majority of cases does realize, that while paint will enhance the appearance of the holder and make it more attractive to those who live in the vicinity, nevertheless, paint has a more important, though utilitarian, purpose. Paint protects at the same time that it decorates and it is essential that gas holders be protected with paint. Otherwise considerable repairs are entailed. Eventually the holder itself will fail. Thus, it may be said that while the gas company may, to a certain degree, be building up good-will for itself in the community that it serves by making its holders attractive and consequently not offending the esthetic sense of those who live around them, in addition thereto it will be protecting its property and prolonging its life ,thereby reducing costs and earning more profits.

Looking at this problem from all angles, both the public and the gas company have a duty to perform to each other. The public should not object or make trouble for the gas company that plans to erect holders in order to serve properly the very public that is objecting to them. On the other hand, the gas company should pay some attention to the general appearance of the holders and to the plant itself and try to improve it as far as possible. This can be done to a certain degree. There is no reason at all why there cannot and should not be the common meeting ground on which both elements may come together and do away with the reoccurring combats that we read of from time to time, when the gas company endeavors to build new holders in new neighborhoods.

# Adjustment of Economic Situation Indicated

## Consumer's position causes concern--Dollar seeks new level of purchasing strength

*L. W. Alwyn-Schmidt*

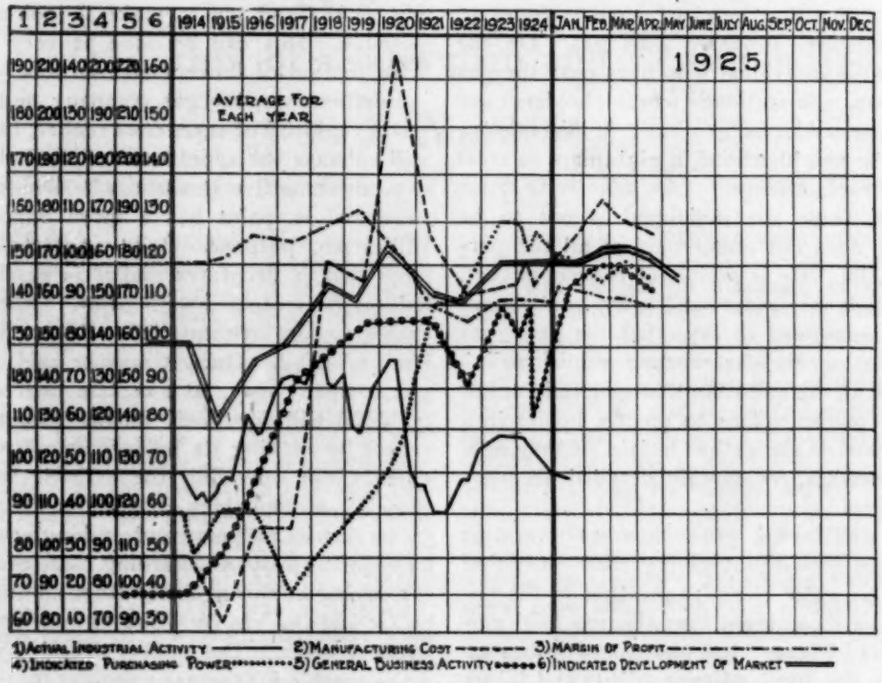
THE last month has not aided much in clearing up what has remained a rather complicated economic situation. While official pronouncements speak of a wave of prosperity that is supposed to have struck the country or is bound to strike it some time to come, there remains the fact that the salesmen, now out on the road, report extremely slow business, while the U. S. Steel Corporation's unfilled orders show a decided downward trend, for the first time in several months. This notwithstanding, more steel has been produced in the leading American steel mills during the last month and the demand for most industrial raw materials remains good, with the factories working, if not exactly at high pressure, at least with a normal business at hand.

### Position of Ultimate Consumer

Just now the position of the ultimate consumer deserves our special attention. The ultimate consumer has passed through a rather trying time, although the possession of savings, laid by during the good years following the war, has helped him to keep his head up. But employment has been extremely low. For almost eight months it has fallen even below the figures of 1914, touching during one month practically the lowest level ever reached since the beginning of our war prosperity in 1915. Such an extended period of low employment cannot pass without leaving its mark upon the country. No high wages, no reasonable rate of food prices, can overcome the impediment of a reduction in the employment figures of more than 10 per cent.

### Shrinkage of Buying Power

As the result there has been noticed a marked shrinkage of the national purchasing power. This, after having remained practically normal throughout last year, has suddenly shown a tendency to weaken. It is now entering upon a downward course which can be stopped only by a decisive upward movement of the employment ratio. For this, however, there is still only a very slender chance considering that a very material improvement will be required to bring it back to the level of the spring of last year before the start of the receding movement of the economic wave.


1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP. OCT. NOV. DEC.
1925
AVERAGE FOR EACH YEAR
1) ACTUAL INDUSTRIAL ACTIVITY
2) MANUFACTURING COST
3) MARGIN OF PROFIT
4) INDICATED PURCHASING POWER
5) GENERAL BUSINESS ACTIVITY
6) INDICATED DEVELOPMENT OF MARKET

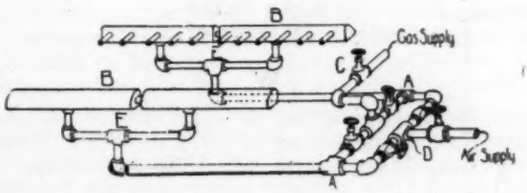
(Continued on page 403)

# PROGRESS IN GAS TECHNOLOGY
## *Domestic and Foreign*

### UTILIZING LOW PRESSURE GAS

IN certain conditions, both gas and air are supplied to industrial furnaces at low pressures. The design of pipe lines and burners in such a case is described in an article which is published in Fuel and Furnaces, in the April, 1925, issue.

The problem presented was subject to the condition that a known quantity of gas was furnished at known line pressure to a basement meter, and air supplied by a blower of known characteristics. Furnace piping is shown in the accompanying photograph. What was desired was to design the piping and the burners so that the required quantity of gas was burned.




*Furnace Piping and Burners for Low Pressure Gas*

In the solution of the problem the following theoretical points are to be considered:

1. The pressure of gas entering the mixing tee and the pressure of the air entering the tee must both be greater than the pressure of the mixture leaving this tee, and should be as near the same as possible.

2. The pressure of the gas at the mixing tee is dependent on the available gas line pressure at the meter, the quantity of gas required, and the resistance encountered in piping, elbows and valves, and can be calculated by well-known handbook formulas as shown in the sample calculation at the end. The gas pressure is ordinarily the lowest and therefore the one which determines the air pressure.

3. The pressure of the air at the tee is dependent on the pressure which the blower develops when delivering the required quantity of air and the pressure drop through piping and control valves.

4. The pressure of the mixture leaving the tee is dependent on the quantity of gas and air mixed, the pressure drop through the mixture piping, the size of the final nozzles, and the velocity required at the nozzles to prevent backfiring into the burner.

The original article contains a complete solution of the problem.

### INDUSTRIAL USES OF GAS

An interesting discussion on various industrial uses of gas is contained in the supplement of the Gas Journal, dated March 25, 1925.

One use that was given considerable attention was the application of gas to the manufacture of confectionery. In this case temperature control is of considerable importance. The principal use of gas is in the boiling of sugar. Gas is also used in covering or dipping tables in making chocolates. It is employed in the starch room, where jellies and gums are made. Another application is in the drying of the boxes in which the chocolates are packed. Cocoa beans are roasted with the aid of gas and nuts are dried in drying ovens heated with gas. Other uses are in heating hot water for washing bottles and also for the drying of the bottles.

The use of gas for varnishing and gum making is also discussed. The advantages of gas for this purpose are given as follows:

1. Better control and adjustment of temperature.
2. Less waste by evaporation, approximately one gallon per ton being saved.
3. Better results were obtained, a clearer product being produced, which is the aim of all varnish makers.
4. The solid fuel furnaces were built in, necessitating a large amount of brickwork which had to be pulled down from time to time to remove the coppers for repairs, and replaced when the coppers were reset. If properly constructed gas furnaces were installed they would practically be portable.
5. There is less danger from fire from oil flashing. The main gas control was fitted outside the furnace room, to enable the operator immediately to shut down, if necessary, while the air blast could be left on, to act as a cooling agent.
6. No storage room was required for coal and ashes, thus affording increased space for production purposes.
7. Absence of ashes, dust or clinker insures a cleaner and healthier furnace room, while the product itself is free from contamination from this source.

Other industrial applications of gas that were described were its use in case hardening and the frying of fish.

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### INDEX FOR JANUARY TO APRIL, 1925, INCLUSIVE

**B**

Benzol, Removal of, from Gas..... 165
Burners, Regulating Gas Supply to..... 165

Burners, Regulation of, at a Distance..... 231

C

Calorimeters, Regulating Flow of Gas to..... 73
Carbon Disulphide in Gas..... 337
Carbonization ..... 273
Carbonization (Low Temperature)..... 253
Carbonization (Low Temperature), in Gas Current ..... 141
Carbonizing Apparatus..... 253
Coal Ash, Melting Point of..... 209
Coal, Classifying, According to Coking Capacity 9
Coal, Determination of Water in..... 10
Coal, Preheating..... 29
Coal, Test by the X-Ray..... 131
Coke Breeze, Gasification of..... 293
Coke, Production and Use of..... 95
Coke Quenching, Purification of Water from... 253
Coke, Transition from Coal..... 141

D

Distribution (High Pressure) Great Britain.... 165

F

Fuel (Carbonized), Reactivity of..... 273

G

Gas, Analysis of..... 315
Gas, Electrical Treatment of..... 96
Gas (Oil), Manufacture of..... 74
Gas, Character of, from Oil Cracking..... 131
Gas, Desulphurization of..... 141, 186
Gas Generators ..... 357
Gas, Manufacture (Combined) of Coal and Water ..... 9, 187
Gas (Coal), Manufacture of, with Steam..... 273
Gas (Peat), Manufacture of..... 337
Gas, Recording Analyzing Apparatus for..... 51
Gas, Purification of..... 52
Gas Sampler, Automatic..... 95
Gas Singer ..... 293

H

Holder, Repairing by Metallization..... 131
Holder (Dry), Erection of..... 141

L

Lignite, Carbonization of..... 357

M

Metals, Chemical Conductivity of..... 51
Meter Protector ..... 337
Monoxide Poisoning, Remedy for..... 73

O

Oil, Determination of Water in..... 10

P

Pressure Regulator..... 231
Producer, with Automatic Ash Removal..... 29
Producer, Gas (Down Draft)..... 209, 273
Purifier (Gas)..... 231
Purification by Alkali..... 232

R

Retorts, Carbonizing..... 10
Retorts, Carbonizing..... 29
Retorts (Horizontal and Inclined), Settings of.. 315
Retorts, Increased Gas Yield from..... 273
Retorts, Receiving Coke from..... 52
Retorts, Waste Heat Boilers on..... 73
Retorts (Vertical), Results of Operation..... 96

S

Sulphur, Determination of, in Coal..... 253

T

Tar, Determination of Water in..... 10
Tar, Dehydration of..... 10, 253
Tar, Distillation of (Lead Bath)..... 293
Tar, Water Content, Increase of..... 29

W

Waste Heat, Utilization of..... 338
Water Gas, Manufacture of..... 29
Water Gas, Manufacture of, from Pulverized Coal ..... 209

## GAS RAISES CALIFORNIA CHICKENS

Mechanical mothers now nurse the Petaluma chickens.

Eggs have been cooked with gas for more than a generation and they have been hatched by the same fuel for a considerable number of years. It was not until recently, however, that the resulting chicks were raised by gas.

On the Pacific Coast, where chicken raising is a major industry, gas has been responsible for the successful output of more than 3,000,000 baby chicks in one community alone. The chickens thus produced cost only a little more than a tenth of a cent each, as far as the consumption of gas for brooding purposes is concerned, and so hardy is the live bit of fluff, hatched and nursed by gas, that it can be, and frequently is, sent by parcel post anywhere within a radius of 72 hours' transportation.

The biggest demand for chicks is during April and the lowest is in January. This is fortunate for the gas company, inasmuch as the usual load of gas consumption is nearly the reverse.

The gas-fired brooder is growing rapidly in popularity, chiefly because of the constant fire hazard and enormous labor costs involved in other fuels.

Another use of gas in the poultry industry which is of minor importance in comparison with hatching or brooding is feed cooking.

# Catechism of Central Station Gas Engineering in the United States

## Installment No. 69

(Continued from last week)

### Saturated Steam

335. What is saturated steam? What is superheated steam?

Ans. Saturated steam may be defined as steam formed directly from, and in contact with, water at the same temperature as the steam, and also as steam just at the point of condensation. Its condition is such that even though perfectly "dry," that is, not containing any water in mechanical suspension (entrained water) as long as its temperature and pressure remain unchanged, yet the slightest fall in temperature or increase in pressure will cause the condensation into water of a portion of the steam. Thus if a certain volume of saturated steam is made to assume a smaller volume, the temperature being kept constant, the pressure will remain the same, enough steam condensing into water to compensate for the reduction in volume of the space occupied. Saturated steam therefore differs from a permanent gas in that it cannot be compressed under constant temperature without changing its physical state; that is, without a portion of it condensing to a liquid.

Superheated steam is "steam which for the same pressure has a greater temperature" and "for any particular weight a greater volume than saturated steam at the same pressure." It is produced by heating saturated steam out of contact with water and thus, if the pressure is kept constant, causing it to expand as its temperature increases. Steam in this condition resembles to a certain extent a permanent gas. If compressed under constant temperature the pressure will at first increase inversely as the volume. However, as the compression continues the steam finally reaches the point of saturation and thereafter the pressure cannot be increased by further compression under constant temperature.

It is advantageous to use superheated steam in steam engines, but it is difficult to attain to any considerable degree of superheating either in a boiler or in a separate superheater, since it is almost impossible to prevent the burning out of the material subjected to the high temperature of the flue gases on one side and that of the superheated steam on the other. As a rule horizontal boilers produce saturated steam, while vertical boilers produce steam slightly superheated

### Latent Heat

336. What is the meaning of the term "latent heat of a vapor," and what is the value of this "latent heat" in the case of steam?

Ans. "Latent heat of a vapor is the quantity of heat which must be communicated to a liquid in order to convert it into a vapor without change of temperature." (Maxwell.)

When heat is supplied in sufficient quantity to a substance its temperature is increased up to a certain point at which, provided the pressure is kept constant, it will remain stationary, no matter how much heat is applied, until the substance has completely changed its physical state; that is, if originally solid has become liquid, or if liquid has become a vapor. There is thus a certain amount of heat required to produce a change of physical state which does not produce any effect on the temperature of the body undergoing the change. When heat was believed to be a material substance and therefore indestructible, the only way in which this apparent disappearance of heat could be explained was by assuming that the quantity not accounted for by change in temperature was hidden away or "latent" in the body ready to be given out again when the converse change of state took place. But under the kinetic theory of heat it is known that heat being merely one form of actual or kinetic energy can be converted into other forms of energy and cease to be heat, and that in the phenomenon of change of physical state that portion of the heat form of energy not employed in increasing the energy of vibration of the molecules (that is, in increasing the temperature and producing heat) is employed in doing two classes of work, 1st, that of overcoming the pressure of the substance enveloping the body undergoing the change of state as it expands through a space represented by the difference in volume between the two states, and 2d, that of overcoming the mutual attraction of the molecules for each other, and separating and rearranging them. In doing this work the heat form of kinetic energy is changed into energy of position or potential energy, the molecules of the body by virtue of the change in their position, due to the work expended on them, possessing the power of giving out energy or doing work by rushing together again when the converse change of state takes place, just as a heavy body raised to a high point possesses the power of doing work by falling to a lower point. Therefore the heat not employed in raising the temperature of the body ceases to exist as heat and the term "latent" is inaccurate and misleading. But it was too firmly fixed in the vocabulary of physics under the old theory to be gotten rid of, and if the definition given above be understood as the proper one, no error can arise from the use of the term. The amount of this latent heat varies with each vapor, and also varies for the same vapor as the pressure and, therefore, the temperature of the vapor is varied. For water vapor or

steam the latent heat at atmospheric pressure is 966.069 British thermal units and at a gauge pressure of 100 lb. per square inch it is 876.511 British thermal units, with intermediate values for each intermediate pressure.

### Heat to Convert Water to Steam

337. How much heat is required to change a pound of water at a temperature of 100 deg. F. into steam at a gauge pressure of 70 lb.?

Ans. The amount of heat required to change a pound of water at a temperature of 100 deg. F. into steam at a gauge pressure of 70 lb. is equal to the total amount of heat in a pound of steam at 70 lb. pressure less the amount of heat in a pound of water at a temperature of 100 deg. F. The total amount of heat required to raise the temperature of a pound of water from 32 degrees to that of the boiling point at any pressure and then convert it into saturated steam can be determined from the formula $H = 1081.4 + 0.305t$, in which H is the number of B.t.u. (British thermal units) required and t is the common temperature of the water and steam in degrees Fahrenheit. The temperature corresponding to any given pressure can be calculated from the formula $t = \frac{2938.16}{6.1993544 - \log p} - 371.85$, in which p is the absolute pressure in pounds per square inch and t is the temperature in degrees Fahrenheit.

In the problem set in the question the gauge pressure at which the steam is formed being 70 lb. the absolute pressure is 84.7 lb. and $t = \frac{2938.16}{6.1993544 - \log 84.7} - 371.85 = \frac{2938.16}{6.1993544 - 1.9278834} - 371.85 = \frac{2938.16}{4.271471} - 371.85 = 687.85 - 371.85 = 316$ deg. F.

Substituting this value in the formula for the total heat we have $H = 1081.4 + 0.305 \times 316 = 1081.4 + 96.38 = 1177.78$ B.t.u.

The amount of heat required to raise the temperature of a pound of water from 32 deg. F. to 100 deg. F. can, unless extreme accuracy is necessary, be taken as being equal to 68 B.t.u., that is, one B.t.u. for each degree difference in temperature.

The heat required to convert a pound of water at a temperature of 100 deg. F. into steam at a gauge pressure of 70 lb. will therefore be $1177.78 - 68 = 1109.78$ B.t.u.

### Steam Tables

Tables have been made out giving the quantity of heat in a pound of steam for absolute pressures from 0.5 lb. to 400 lb. per square inch, and are published in almost every book treating of the properties of steam. If copies of these tables are available the value of H need not be calculated but can be obtained from them in the following manner: As the pressure in the present problem is 84.7, the corresponding value for H will be less than that for 85 lb. by an amount equal to the product obtained by multiplying the difference between the values for 84 lb. and 85 lb. respectively by 0.3. The value for 84 lb. absolute pressure is given as 1177.6 and that for 85 lb. as 1177.9 B.t.u. The difference between them is 0.3 B.t.u. Hence the value for 84.7 lb. equals $1177.9 - (0.3 \times 0.3) = 1177.9 - 0.09 = 1177.81$. Subtracting 68 from this as before gives the heat required to convert a pound of water at a temperature of 100 deg. F. into steam at a gauge pressure of 70 lb., which will therefore be $1177.81 - 68 = 1109.81$ B.t.u. The difference between the result as calculated and that obtained from tables is due to the difference in the number of decimal places employed in the two cases.

### Vapor Tension

338. What is meant by the tension of a vapor? By maximum vapor tension?

Ans. By the tension of a vapor is meant the pressure exerted by the vapor against the walls of a vessel containing it or in opposition to any other restraining force. The pressure is due to the force with which the molecules of the vapor, as they move more or less freely along straight lines, strike against the walls of the vessel or move in a direction opposite to that of the force.

The tension of a vapor is also the measure of the extent to which it can resist compression, and the maximum vapor tension, sometimes called simply the vapor tension of a substance, is the heaviest pressure which it can resist, when in contact with some of the liquid from which it is produced, that is, when saturated, without a portion of the vapor being condensed back to the liquid form. For any given vapor this maximum tension varies with the temperature, being greater as the temperature is higher.

At the same temperature each vapor has its own maximum tension, the vapors of liquids boiling at low temperatures having greater tensions than those of liquids boiling at high temperatures. High "vapor tensions" therefore correspond to low boiling points, and, conversely, low "vapor tensions" to high boiling points.

### Saturation of a Gas

339. What is meant by the statement that a gas is saturated with vapor at a certain temperature and pressure?

Ans. A gas is said to be saturated with vapor at a certain temperature and pressure when it contains the full amount of vapor that it can carry under these conditions. When a gas is so saturated it cannot be made to take up any more vapor unless its temperature is increased or its pressure reduced, and any increase of pressure or decrease of temperature will cause the condensation into the liquid state of a portion of the vapor. At any given temperature and pressure a definite quantity of any given vapor is required to saturate a gas, and this quantity is always the same for the same conditions.

(Seventieth Installment Next Week)

## ADJUSTMENT OF ECONOMIC SITUATION INDICATED

(Continued from page 398)

### Position of the Dollar

With Germany having submitted to the Dawes plan and re-established the price of the mark, with the pound sterling practically back at gold basis and with France fighting to regain its financial strength, the dollar is now placed before the dilemma to reform or go out of business. If other monetary units climb up, the dollar will have to do its own climbing. It is only self-deception to speak of the powerful position of the dollar as long as it will buy only half what it used to buy ten years ago.

Unfortunately, such a demobilization of the dollar cannot take place without a lowering of wages and production cost, because the one is not possible without the other. It must result in lower prices. But with lower production cost and lower wages and leading in turn to lower prices there will be more merchandise for each dollar. More merchandise means more employment. It means a multiplication of slightly reduced purchasing power in place of a reduction of the number of buyers each having a slightly larger amount of money to spend, which characterizes today's market situation. The larger the number of buyers, the bigger the purchasing urge and the better the chances for the future.

### Not an Easy Problem

This seems to be common sense enough, but the suggested remedy of a general cut in production cost is no easy one. It will have, no doubt, the opposition of organized labor as much as that of many manufacturers. On the other hand, we do not appear to need worry very much about the ultimate outcome of this situation. It will develop logically under the influence of the general economic readjustment which is now taking place all over the world, a readjustment from which this country cannot separate itself.

But the process can be helped along materially by a realization of the utter necessity of the operation. This will require a change in the attitude of the industrial producer to the problems of production as affecting its cost. There can not be in the future the simple remedy of raising the price as a panacea for all industrial ills. Instead, there must be the most effective tendency of finding short cuts to lower production cost. Wage reduction and lowered profits may have to carry the brunt of the battle, but the ultimate solution will be provided by still better organization of production, elimination of waste and increased utilization of potential industrial power.

### Protection from Foreign Competition

And it may be well to point out that this process of reorientation of industrial production can not take place safely unless the American industry remains protected during its progress from foreign influences, especially from ruinous foreign competition. The American economic organism stands separate from similar organisms in the rest of the world. We have built up an economic life offering better compensation to the toiler than any other country and we cannot afford to dissipate all this by risky experimentation with the door left open to chance.

So reasoned, tariff legislation must be a feature of this program of rehabilitating the weakened dollar until it has regained its old strength and until the workers' wages will again buy their full value. The situation is one to which the general appellation of "good" or "unsatisfactory" does not apply, because it has its causes not in the constellation of the market itself.

We are dealing with the last phases of a far-reaching fundamental readjustment of the world's economic structure.

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## ERECTING A GAS HOLDER

(Continued from page 392)

from getting started on the job. The delay in the foundation and their inability to get their foremen on the job quickly, made it necessary for them to work overtime for about six weeks. Of course, this is not at all desirable, since with artificial light not nearly as much work could be done in the same period of time as could be done in daylight.

### Testing and Painting the Holder

In spite of this overtime work, the early winter caught them before the work was finished, which entailed considerable expense in endeavoring to complete the testing and painting of the holder, which finally had to be postponed until spring, as it could not be satisfactorily done in the cold and bad winter weather. Although the holder was in good operating condition at the time it was turned over to us, January 1, we could not be certain there were not some small leaks on top of the crown, as there was a layer of about half an inch of ice over the entire crown, and although steam was tried to thaw this ice to complete the testing, it could not be done satisfactorily.

This holder is 136 feet 6 inches in diameter, 152 feet high and contains 960 tons of steel. It required approximately 39 cars of 25 tons each to deliver this amount of steel from the contractor's plant to Sheboygan.

This holder is located approximately 8,000 feet west of the present plant, and as we expect to have our new manufacturing plant at this site within a few years, a temporary boiler plant was erected to take care of heating the tank. A steel building was purchased for housing the boilers and it is a simple matter to take this building down and set it at any location we desire later, if we find the present location isn't the proper place.

### Connecting the Holder to the Plant

This holder was connected to the gas plant with a 12-inch line. Cast iron pipe with cement joints was used, except at the river crossings, where steel pipe was used. This main was tested out under 12 pounds pressure.

The Sheboygan River is a very crooked stream and it was necessary for us to cross it twice with this 12-inch line. At the crossing near the gas plant, where the river is navigable and under the jurisdiction of the War Department, we dredged down 25 feet below water level. At the crossing near the holder, where the river is very shallow, the main was laid on the steel work under the bridge. This 12-inch line, together with a 12-inch line we plan to lay toward the north from the new site, will be the main feeder lines when all the gas is manufactured at the new location.

A steam-driven booster was installed at the gas plant, with an electrically driven booster at the holder to take care of the pumping back and forth.

Although the painting and testing of the holder were not completed this year, it was placed in operation January 1. It has been working very satisfactorily, and after operating as we have been for two or three years, with a holder capacity of about one-third our sendout, and the last year the holder capacity being about one-fourth of our sendout, our feeling, after the new holder was in use, can best be described by Briggs' famous cartoons, "A grand and glorious feeling."

## SECURING NEW BUSINESS

(Continued from page 396)

logical word from the public's viewpoint, must be transmitted by us to them in the most efficient manner. This, I believe, is through an active sales organization of trained, efficient, diplomatic, tactful and modern salesmen backed by powerful effective publicity.

Concluding on this question, then, I believe that the salesperson of today, being trained as a representative along all these lines, besides his knowledge of his appliances, must be continually bolstered up and sold on this spirit by his company and his position placed on an equal footing with an ambassador from a foreign country in Washington representing his nation, as he is in reality for his company the ambassador between the utility and its source of existence, the people, carrying its message of Service to them.

### Sales Output

In explanation of the first part of this sub-title, "Sales Output," we in Rockford prepare a complete sales plan covering the current year in advance, a quota being set for each type of appliance sold, and by strict application and adherence to this program it is surprising how close the year's result will compare with our prearranged quota.

This gives us a concise working arrangement, and a very practical method for price making, being guided considerably, of course, by general business conditions and the past year's results.

For this year, 1925, our sales plans are divided into the following monthly campaigns:

January—Builders and real estate dealers.

February—Special campaign; tank water heaters, 13 per cent discount sale, Friday the 13th.

March—Automatic water heaters, 13 per cent discount, Friday the 13th.

April—Combination sale: Water heaters and ranges, 5 per cent allowance.

May—No sale.

June—No sale.

July—50-50 sale, cabinet ranges only.

August—No sale.

# Mother's Day

## *As It Was—and Is*

LET'S think of Mother's Day for a moment, not as Sunday, May 10th, but as the average day in Mother's life. Mother's day used to be made up of one hard task after another. She toiled over the hot cookstove, heated water by the bucketful, tended the fires that warmed the house. She was middle-aged at thirty-five and hardly knew what it was to have even an afternoon off.

**How Many of these Labor-Saving Gas Appliances in Your Home?**

*Washer*
*Ironer*
*Gas Range*
*Water Heater*
*Incinerator*
*Gas Furnace*
*Gas Heaters*
*Gas Iron*

**Sold on Easy Terms Here!**

Now, Mother's day is systematically planned. She cooks on a clean gas range, the water is heated automatically by gas, and the gas furnace warms the house. She has time and strength to enjoy life and is young at fifty years of age. Gas appliances have freed her from household drudgery. Mother knows that she "can do it better with Gas."

**(Your Name and Address)**

A.G.A.-420

September—Automatic water heaters.

October—Automatic water heaters.

November—13 per cent discount sale, Friday the 13th.

December—Inventory sale, special reduction on samples, etc.

**January**

During this month an intensive drive is made on contractors and real estate dealers, our intention being to have blanket orders for the year placed by these people for their requirements.

**February**

A concerted drive is made during this month on tank water heaters. The 13 per cent sale mentioned has been successful with us in the past, it being an extra inducement to purchase at a 13 per cent discount all appliances bought on the 13th day of the month when it falls on Friday. The advertising value of this can readily be seen. During this year, Friday the 13th is with us during three months, February, March and November, and we shall take advantage of this unusual condition by the use of this scheme. Salesmen's commissions are reduced 5 per cent during this sale, but with the added advantage of greater sales volume during these "Special Sales," more money is made by them.

**March to June**

We again have Friday the 13th in March, and in conjunction push hard for automatic water heater business.

Intensified effort is expended in April on this combination range and circulating water heater sale, a reduction of $5 being made on the purchase. The results of this work have been not only productive of a nice volume, but exceedingly profitable.

No special prearranged plans are considered for May and June, as it is the peak of our range season, and that keeps us extremely busy.

**July**

During this month, and usually following the week of July 4, a certain type of cabinet range is chosen and reduced 5 per cent from the original resale price. Salesmen's commissions are also reduced 5 per cent, and by concentrated effort and intensive advertising results have been very satisfactory, especially as it follows immediately the months of May and June, during which periods no special campaign has been held, and the natural resultant drop in sales occurs.

**September to November**

September and October are our best months for automatic water heater business. New homes started in the spring are usually completed, and our educational and sales work done then best materializes into orders for this line of appliances.

**November**

We usually leave November open, but this year gives us another "Friday the 13th," and this sale will again be put on.

**December**

We follow Christmas with an inventory sale, clearing our warehouse of all samples, pulled appliances and obsolete stock.

This briefly outlines the policies employed by us in securing new business along sales plans of a campaign or special nature only, the usual house canvassing, group canvassing, etc., being thoroughly followed at all times.

**A Cost Analysis**

The real purport of this article I have left for my last and concluding paragraphs, and I shall give herewith in their proper rotation a summary in percentages of costs employed by us in doing business

| | % | % |
|---|---|---|
| Sales | | 100 |
| Appliance cost | 50 | |
| Installation and warehousing | 20 | 70 |
| Installation income | | 30 |
| Merc. Expenses: | | |
| Salesmen | 12 | |
| Advertising | 4 | |
| Management, clerical, etc. | 5 | 21 |
| Mercantile profit | | 9 |
| Mercantile income | | 1 |
| Total profit | | 10 |

In pricing pipe work of all descriptions, which is done by us on a "Time and Material" basis, we add 40 per cent to installation costs.

With the above figures as a basis, we show a 10 per cent net profit on our sales work, but it is the result of quantity output based on volume pricing that must be first produced, and by the use of foresight, judgment and vision it can be done.

## FOOD SENT BY POST TO BE COOKED BY GAS

Flowers, and now finally even food is being sold and delivered by the postman. In the vicinity of Baltimore a manufacturer of potato chips has developed a considerable parcel post business with merchants in the smaller towns, which has been made possible by means of an interesting method of preparation.

Cooking potato chips so that they will retain their flavor depends almost entirely on the kind of fuel used for this purpose, it has been discovered. Gas in connection with surface combustion cookers seems to have solved the problem.

In the production of "spud chips" one of the most essential points is that the oil in which they are cooked should be kept uniformly at a temperature of approximately 360 degrees Fahrenheit. The reason for this is that too low a temperature of the oil will produce soggy chips, which often stick together, and also will cause them to absorb too much oil before being properly cooked.

At the other extreme, namely, too high an oil temperature, it has been found that it is only with great difficulty that a uniformly colored batch can be produced, due to the majority of the chips becoming too dark before the rest have attained the desired color. Gas was finally adopted owing to the uniformly ideal conditions assured by its use as a fuel.

## THE FUEL OF THE FUTURE—WHAT SHALL IT BE?

(Continued from page 391)

Coming back to figure 1 again, it is possible to calculate now the available heat in the flue gases at that temperature. Find first the point 1,500 on the lower temperature scale and then project upward. The original gas that was used in this plant had a thermal value of 550 British thermal units per cubic foot. There is no curve on the curve diagram for this kind of gas and the nearest one is the curve that is drawn for a 600 British thermal unit coke oven gas. It is, therefore, necessary to interpolate a curve between that one and the one for water gas at 304 B.t.u., or exterpolate from the natural gas curve of 950 B.t.u. When this is done carefully it will be found that a point will be obtained on the vertical line drawn from the temperature scale, which point can then be projected across horizontally until the right-hand scale is intersected at 370 B.t.u. per cubic foot, as the available heat.

It is then easy to find the theoretical consumption of gas per hour by dividing the total of 613,000 B.t.u. required for the operation by the 370 B.t.u. available in a cubic foot of the gaseous fuel, with the result that 166 cubic feet of gas will be required per hour.

### Holding Consumption

It is, of course, evident that while this amount of gas burned every hour will produce the working temperature as indicated above, it will not maintain the furnace at that temperature, for no consideration has been taken of the heat losses that are encountered in any kind of furnace or heating operation. It is, therefore, necessary to make certain calculations to determine the amount of gas that will have to be burned to maintain the temperature of the furnace at the proper point after it has once been attained. This consumption of gas is known as the holding consumption. It is found in the following manner:

The dimensions of the furnace are of paramount importance in this connection. Thus the inside length of the furnace was five feet, the width thirty-eight inches and the height eighteen inches. The area of the furnace is found to be sixty square feet. The area of the discharge opening at the further end of the furnace was found to be 40.5 square inches or 0.3 square foot ($3 \times 3 \times 4.5$).

### Heat Loss Through Furnace Walls

It is first necessary to find the heat loss per unit through the walls of the furnace. This can be done by means of the experimentally determined curve which is shown in figure 2, or else by the use of empirical factors which have been found to give the correct results in practical operations. The curve in figure 2, that is, the solid curve, is for a 600 B.t.u. gas. It is necessary to make a little calculation to find the corresponding result for a 550 B.t.u. gas. This is done by multiplying the value found from this curve by the ratio 600:550. The result will be found to be 4.2 cubic feet per hour per square foot of surface. The proportional result obtained from the curve is found by running a vertical line upward from the point 1,500 on the horizontal scale. This gives 3.8, which will yield the value 4.2 when multiplied by $\frac{600}{550}$.

Inasmuch as the total area of the furnace is 60 square feet, the total radiation through the walls of the furnace becomes equal to $60 \times 4.2$, or 252 cubic feet per hour.

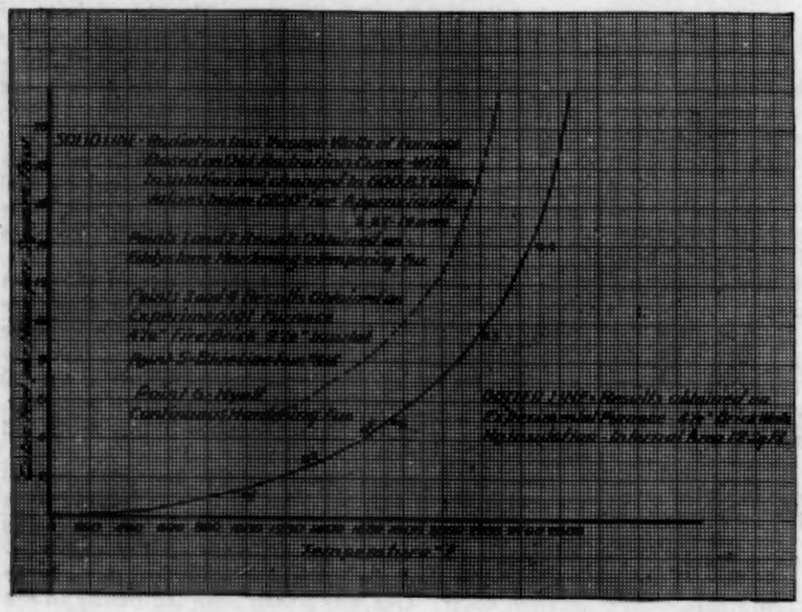

*Fig. 2. Loss Through Furnace Walls*

### Loss Through Furnace Door

It will be remembered that there is an opening in the front of the furnace and a certain amount of heat will be radiated through this opening, as well as through the walls of the furnace. This heat must, of course, be supplied by the fuel and is to be considered as unavailable heat, that is, heat which cannot be employed for useful purpose in the heating furnace. It is estimated that the loss of heat through the discharge opening will be at the rate of 25,000 B.t.u. per square foot per hour. Inasmuch as the area of the opening is 0.3 square foot, the total amount of heat that will be lost by radiation in this manner is equal to $0.3 \times 25{,}000$, or 7,500 British thermal units per hour.

When the latter figure is divided by 370, which is the heat units that are present in one cubic foot of the flue gases obtained from the combustion of the gas that is employed in this heating process, the number of cubic feet of gas that must be burned in order to take care of this loss of heat is found to be 20.3 cubic feet per hour.

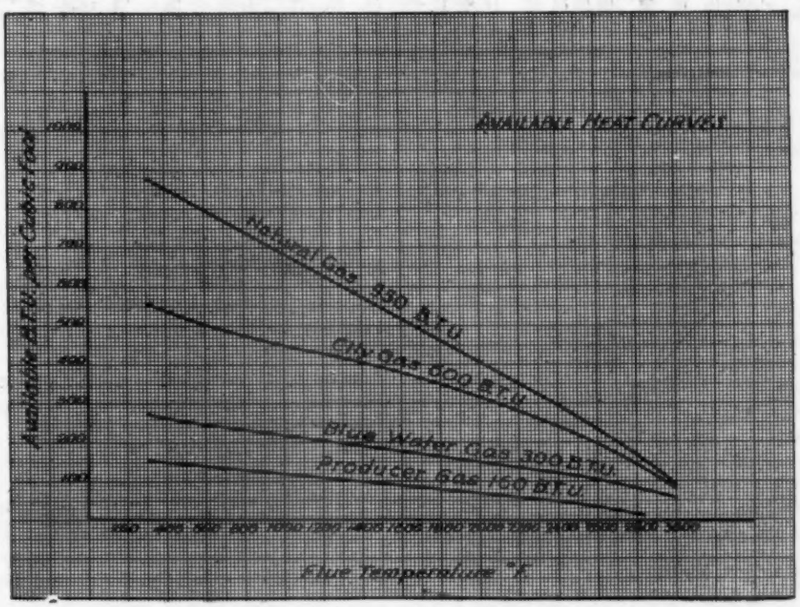


*Fig. 3. Available Heat Curves*

### Total Gas Consumption

Then it is easy to calculate the total consumption of gas that must take place in the furnace to supply the heat that is lost in one way or another. This consumption of gas is called the holding consumption. This is equal to 252 + 21, or 273 cubic feet per hour. It was indicated in this particular instance that the holding consumption was probably large due to the fact that not enough consideration was given to the four and one-half inches of insulation that are found in the door which closes the opening in the back end of the furnace where the pipes full of saw blades are discharged.

The total consumption of gas is then equal to what is required to bring the saws up to the proper temperature plus that which is used up in keeping them at that temperature, or 166 + 273, or 439 cubic feet of 550 B.t.u. gas per hour.

The thermal efficiency of the heating operation is easy to calculate. The heat that may be classed as useful is that which is necessary to heat up the metal to the required temperature, or, as has been determined in the above, 61,300 B.t.u. per hour. There are burned 439 cubic feet of gas per hour, having a thermal value of 550 B.t.u. per cubic foot.

The efficiency is $\frac{61300}{550 \times 439}$, or 25.4 per cent. This is, of course, the thermal efficiency of the furnace as estimated from these calculations.

## PERFECT CASTINGS MADE POSSIBLE BY NEW METHOD OF CONTROLLED HEAT

Some of the most important developments in industry have never been advertised, except indirectly, through an increase in quality of manufactured goods or a lowering of prices to the purchaser.

The manufacture of automobile spare parts has reached a point now where thousands of pieces can be turned out by automatic die casting with a degree of accuracy which was unknown a few years ago.

Formerly these parts had to be matched, after casting, with the utmost care. Today they are taken from the die already conforming to the minutest specifications.

Manufactured gas, which is the modern scientific fuel of industry, has been largely responsible for this perfection, as a result of which some of the largest die casting companies have converted their entire plants to high pressure gas.

One of the principle advantages of gas in this work is that it prevents the cracking of the original dies, which are often very intricate and costly. The cost of the intricate dies increases the final cost of the castings, so that these castings must be made in large quantities to be economical.

These dies must be cooled after each casting so that the new metal will be chilled quickly and have the fine grain required for a strong product. The die is, therefore, alternately cooled and heated, and if it has not received the proper heat treatment the fatigue of the metal will quickly destroy it.

To insure this life and prevent damage during the hardening of the die, complete control of the fuel supply to the furnaces, as secured through the use of gas, must be obtained.

# Current Market Prices

## COALS (By Courtesy of Coal Age)

### A. Bituminous.

(Spot prices, F. O. B. mines, net tons)

| | Market | Price |
|---|---|---|
| **High Volatile, Eastern** | | |
| Pool 54-64 (Gas Standard) | New York | $1.35 to $1.60 |
| Pittsburgh screened gas | Pittsburgh | 2.30 to 2.50 |
| Pittsburgh gas, mine run | Pittsburgh | 2.10 to 2.25 |
| Kanawha lump | Columbus | 2.00 to 2.25 |
| Kanawha mine run | Columbus | 1.35 to 1.50 |
| West Virginia lump | Cincinnati | 1.75 to 2.25 |
| W. Virginia gas, mine run | Cincinnati | 1.40 to 1.50 |
| **Midwest** | | |
| Indiana 4th vein lump | Chicago | 2.50 to 2.75 |
| Indiana 4th vein mine run | Chicago | 2.25 to 2.50 |
| **South and Southwest** | | |
| Big Seam lump | Birmingham | 2.40 to 3.00 |
| Big Seam mine run | Birmingham | 1.50 to 2.00 |
| Southeast Kentucky block | Louisville | 2.00 to 2.25 |
| Southeast Kentucky mine run | Louisville | 1.15 to 1.50 |

### B. Anthracite

(Spot prices, F. O. B. mines, gross tons)

| Market | Freight Rates | Independent | Company |
|---|---|---|---|
| Egg New York | $2.34 | $8.50 to $8.75 | $8.25 to $8.50 |
| Egg Philadelphia | 2.39 | 8.50 to 9.20 | 8.30 to 8.50 |
| Egg Chicago (net tons) | 5.06 | 7.76 to 8.40 | 7.42 to 8.08 |

## COKE (By Courtesy of Iron Trade Review)

| | |
|---|---|
| Connellsville, furnace | $3.15 to $3.35 |
| Wise County, furnace | 3.75 to 4.25 |
| Alabama, furnace | 4.00 to 4.50 |
| Foundry, Newark, N. J., del. | 10.41 |
| Foundry, Chicago, ovens | 10 75 |
| Foundry, Boston, delivered | 12.00 |
| Foundry, St. Louis | 11.00 |
| Foundry, Granite City, Ill. | 9.00 |
| Foundry, Alabama | 5.00 to 5.50 |

## PETROLEUM

(By Courtesy of Oil, Paint and Drug Reporter)

(Prices at wells, per bbl.)

| | |
|---|---|
| **Pennsylvania—Ohio—West Virginia** | |
| Cabell, West Virginia | $2.05 |
| Corning, Ohio | 1.95 |
| Lima | 2.33 |
| Pennsylvania | $3.15 to 3.40 |
| Wooster, Ohio | 2.15 |
| **Indiana—Illinois** | |
| Illinois | 2.02 |
| Indiana | 2.03 |
| **Oklahoma—Kansas** | |
| Mid-continent (low gravity) | 1.35 |
| **Gulf Coast** | |
| Gulf Coast, Grade A | $1.75 |
| Gulf Coast, Grade B | 1.50 |

## GAS OILS

| | |
|---|---|
| Gas Oil, Bayonne, bulk, gal. | 6¾c |
| Gas Oil (32-36), Oklahoma, gal. | 2¾ to 3c |
| Gas Oil (32-36), Gulf Coast, gal. | 4¼ to 5c |

## PIPE AND FITTINGS—CAReview)

(By Courtesy Iron Trade ST IRON GAS PIPE

| | |
|---|---|
| Four-inch, Chicago | $53.20 to $55.20 |
| Six-inch and over, Chicago | 49.20 to 51.20 |
| Four-inch, Birmingham | 49.00 to 49.50 |
| Six-inch and over, Birmingham | 45.00 to 45.50 |
| Four-inch, New York | 62.50 to 63.50 |
| Six-inch and over, New York | 57.50 to 58.50 |
| Standard fittings, Birmingham, base | 115.00 |

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20.

## BY-PRODUCTS

(By Courtesy of Oil, Paint and Drug Reporter)

| | |
|---|---|
| Ammonia aqua, 16 deg. drums, lb. | 5 to 5¼c |
| Ammonia aqua, 20 deg. drums, lb. | 6¼ to 6½c |
| Ammonia aqua, 26 deg. drums, lb. | 6½ to 6¾c |
| Ammonia aqua, anhydrous cylinder, lb. | 30 to 36 c |
| Ammonium sulphate, bulk, delivered Northern markets, per 100 lbs. | $2.95 |
| Ammonia sulphate, bulk, delivered Southern markets | $3.00 to 3.05 |
| Potash Prussiate, yellow casks | 18 to 18½c |
| Potash Prussiate, red casks, lb | 37 to 37½c |
| Soda Prussiate, yellow casks | 10¼ to 10½c |
| Soda Sulphocyanide, barrels, lb. | 45 to 55 c |

## COAL TAR BASIC PRODUCTS

(By Courtesy of Oil, Paint and Drug Peporter)

| | |
|---|---|
| Benzol C. P. tanks, works, gal. | 24c |
| Benzol, drums, gal. | 29c |
| Benzol, 90% tanks, works, gal. | 22c |
| Benzol, 90% drums, gal. | 27c |
| Naphthalene, flake, barrels, lb. | 5½c |
| Naphthalene, dyestuff bags, lb. | 5 to 5½c |
| Solvent Naphtha, water white, works, gal. | 24 to 25c |
| Solvent Naphtha, drums, works, gal. | 30c |
| Toluene, C. P. tanks, works, gal. | 26c |
| Toluene, C. P. drums, works, gal. | 31c |

### Coal

The output of bituminous coal turned upward in the week ended April 25, when, according to the Geological Survey, 8,016,000 net tons were produced, as compared with 7,515,000 tons in the preceding week and 6,944,000 tons in the corresponding week of last year. Anthracite production in the week ended April 25 was 1,937,000 net tons, compared with 1,567,000 tons in the previous week and 1,205,000 tons in the corresponding week of 1924.

### Gas Oil

Gas oil, 28 degrees gravity or better, was held at 6¾ cents per gallon, bulk, f. o. b. Bayonne refinery, a fair routine movement characterizing the week's trading. The continued large production of heavy crude in the Southwest depressed the market still further and reductions of 5 to 10 cents per barrel were made in refinery quotations for the week.

## H. C. Abell Addresses Southwestern Convention

Houston, Texas—Universal use of gas fuel in industry and the home is an inevitable development of the future and will result in a gas industry three times its present size, according to H. C. Abell, president of the American Gas Association, in an address before the convention of the Southwestern Public Service Association.

In addition to holding the office of president of the national association of manufactured gas companies in this country and Canada, Mr. Abell is vice-president of the Electric Bond & Share Company of New York. He has been associated with the public utility business in the Southwest for 20 years.

While we marvel at present-day inventions like the radio and wired photography, Mr. Abell declared that the gas industry is making strides that will completely revolutionize the living habits of Americans of the next generation.

"America will be the first nation to have its homes heated by gas, thermostatically controlled," he said. "We will be the first nation to discard ice for gas-operated refrigerators; the first to universally adopt the temperature method of cooking food by gas, and the first to outlaw smoke, soot and ashes by using gas fuel instead of solid fuel for all heating processes in shops and factories."

Public realization of the rapid depletion of the nation's natural resources, reflecting itself in the appointment by President Coolidge of the Oil Conservation Commission, and the growing conviction that human life and property is suffering incalculable damage from the smoke evil, were among the factors mentioned by Mr. Abell as responsible for the tremendous growth in the use of gas.

"The progress of fuel conservation depends upon the progress of gas utilization," he said. "We do not burn anything until it has first been transformed into a gas. The public is beginning to see this truth and is acting accordingly. The gas industry labors incessantly to conserve the sources of the nation's heat. Its whole plan and scope of operation is based on the most efficient extraction of heat from its sources, and its most economical distribution and utilization. The industry has grown because it has saved coal, labor and money for the people."

Speaking of the smoke nuisance and its abolition, he said:

"There are 10,000 gas-heated homes in America today. More are being added each day. The immediate effects of this development are a purer atmosphere, a sure but steady lessening of deaths due to respiratory diseases, money saved in the removal of ashes, and enhanced property values.

"To another generation of fuel the home once given over to coal, ashes and dirt will be transformed

Mr. Abell said the progress of the gas industry during the last two decades has been a record of peak after peak, with three times as much gas consumed during the last ten years as during the preceding ten. Sales for 1924 were more than 400 billion cubic feet, he said, with 440,000 new customers added to the lines of gas companies.

"Unprecedented use of gas in industrial heating processes is one of the remarkable developments in recent years," he declared. "During the last ten years industrial use of gas has jumped 1,000 per cent and indications are that 1925 will establish a new high record in consumption."

Mr. Abell's talk was a part of a most comprehensive program that was listened to by a large audience at the annual convention of the Southwestern Public Service Association. The meetings were held May 5-7 inclusive in Houston, Texas.

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## Second Sales Conference Planned

**Attractive Program to Be Presented at Lake Mohunk, N. Y.**

The second sales conference of the commercial section of the American Gas Association will be held at Lake Mohunk, New York, May 26 to 29 inclusive. A program has been worked out which embraces a number of discussions by competent experts, on all important phases of the daily sales and promotion work. There will also be round table discussions and group meetings. It is planned to hold the business sessions in the mornings and evenings, leaving the afternoons for recreation.

The detailed program of the conference follows.

Lake Mohunk, where the conference will be held, is a short distance west of the Hudson River, opposite Poughkeepsie. An up-to-date hotel is located near the lake. Facilities for recreation include golfing, tennis, riding, boating, bowling, croquet and tramping. Further information may be secured from the commercial section of the American Gas Association.

into a playroom for the children, a billiard room or a gymnasium. In fact, gas house heating will add an extra room to the home."

(Tuesday, May 26, 10:30 a. m.)

Theme: Looking Ahead in Gas Sales.

Address of welcome, T. R. Beal, president, Central Hudson Gas & Electric Co.

Response, Alexander Forward, secretary-manager, American Gas Association.

Our Commercial Future, H. C. Abell, president, American Gas Association.

What We Can Learn from Other Industries, Floyd Parsons.

The A. G. A. Three-Year Sales Plan, R. J. Canniff, chairman, Sales Stimulation Committee, American Gas Association.

(Wednesday, May 27, 9:30 a. m.

Theme: Organizing for More and Better Sales.

Successful Sales Organization, Philip Cabot, Harvard School of Business Administration.

The Doherty Method of Sales Building, Thos. F. Kennedy, manager, New Business Department, H. L. Doherty & Co.

Value of Home Service to the Industry, Miss Ina B. Rowe, Central Hudson System.

National Co-operation for Sales, F. M. Feiker, special assistant to Secretary Herbert Hoover, U. S. Department of Commerce.

Fifteen Minutes of Home Service, Ada Bessie Swann, chairman, Home Service Committee, American Gas Association.

Changing the Habits in the Home, Dr. R. E. Rindfusz, executive secretary, Periodical Publishers Association.

(Thursday, May 28, 9:30 a. m.)

Theme: Selling More Gas and Appliances.

The Economics of Gas Sales, P. S. Young, vice-president, Public Service Electric & Gas Co.

Display Advertising—National and Local, Bruce Barton, president, Barton, Durstine & Osborn Advertising Agency.

Selling by Mail, John Howie Wright, editor, Postage Magazine.

Selling Direct to Consumers.

Sizing Up Your Market, Theo. E. Damm, advertising manager, Devoe & Raynolds Co.

(Friday, May 29, 9:30 a. m.)

Theme: More Ways to Build Sales.

What Radio Is Doing for Gas, W. E. Harkness, vice-president in charge of broadcasting, W E A F.

Building More Gas in Buildings, D. Knickerbacker Boyd, architect.

House Heating—The Future Sales Builder, Robert Searle, president, Rochester Gas & Electric Corp.

Co-operation—The Way to Build Sales, Arthur M. East, manager, "Save the Surface Campaign."

The Dealer and You, Llew Soule, editor, Hardware Age.

# Missouri Gas Men to Meet May 7 to 9 Inclusive

The 19th annual convention of the Missouri Association of Public Utilities will be held from May 7 to 9 inclusive, at Joplin, Mo. The program of the three-day meeting is as follows:

BUSINESS PROGRAM

(Thursday, May 7, Morning.)

9 to 10—Registration (Connor Roof Garden), information, banquet tickets, badges, etc. Register early and avoid inconvenience.

10:00—General meeting, C. L. Proctor, president, presiding; invocation, Rev. Cliff Titus, Joplin, Mo., pastor First Christian Church address of welcome, Hon. Taylor Snapp, Mayor of Joplin; response, W. H. Henby, St. Louis, Mo., manager, West St. Louis Water & Light Co.; address of president, C. L. Proctor, Joplin, Mo., general manager, the Empire Dist. Elec. Co.; "Motor Busses," Col. Fred Buffe, Kansas City Mo., manager, Kansas City Railways Co.; "Street and Highway Lighting," Louis Friedman, Chicago, Ill., General Electric Co.

(Thursday, May 7, Afternoon.)

2:00—"Public Relations," J. F. Owens, Oklahoma City, Okla., general manager, Oklahoma Gas & Electric Co.; "Recent Progress in the Gas Industry," Charles A. Monroe, St. Louis, Mo., chairman of the board, Laclede Gas Co.; report of Legislative Committee, John C. Hall, chairman, St. Louis, Mo.; report of Public Information Committee, J. B. Sheridan, director, St. Louis, Mo.; report of Women's Information Committee, Miss Mary McKelvy, chairman, Joplin, Mo.

(Friday, May 8, Morning.)

9:30—"Recent Engineering Developments," Col. P. Junkersfeld, New York City, Junkersfeld & McClellan.

"Feminine Power Factors," Miss Helen Steiner, Cleveland, Ohio, director of public relations, Ohio Public Service Co.; Question Box, subjects assigned to various members; open discussion.

(Friday, May 8, Noon.)

12:30—Inspection trip to Picher, Okla., largest lead and zinc field in the world; cars leave Fourth and Main streets (see entertainment program).

(Saturday, May 9, Morning.)

10:00—Executive session; reports; election of officers; adjournment.

### Southern Gas Co. Establishes New Office

A notice has been received to the effect that the Southern Gas & Power Corporation, which has its main offices in Philadelphia, Pa., has established a field operating office in Greensboro, N. C., in the Jefferson building.

R. J. Hole is vice-president in charge of operations, and B. F. Pickard the commercial manager.

### The Oriole

This is the title of a new house organ which has just been started for the Oriole Division of Standard Equipment Corp., manufacturers of gas appliances. It is aimed to publish the Oriole regularly each month. The editor is congratulated on the attractive makeup of the publication and the high caliber of the material contained therein.

### Gas Co. Ends Corporate Existence

Albany, N. Y.—Owego Gas Light Company, Owego, has filed a certificate in the office of the Secretary of State dissolving its corporate existence.

### Iroquois Gas Co. to Increase Capital Stock

Albany, N. Y.—A certificate has been filed in the office of the Secretary of State at Albany through J. H. Myers, attorney, increasing the capital stock of the Iroquois Gas Company of Buffalo from $20,000,000 to $22,500,000.

# New England Commercial Men to Hold Conference

The New England Sales Conference of the Commercial Section, American Gas Association (in co-operation with the Gas Sales Association of New England and the Commercial Managers Association) will be held at the Hotel Thorwald, Gloucester, Mass., for four days, beginning Tuesday, June 2, 1925. This is one of the three regional meetings sanctioned by the executive board as an integral part of our national sales program.

The purpose of this conference is to assist commercial executives to organize and operate their departments along sound merchandising lines and thus begin the program for a 50 per cent increase in gas and appliance sales in three years.

This conference has a schedule of practical sales discussions of the problems of selling which we meet in our every-day work. Leading men of the gas business and other industries will tell us how they have met and solved these problems. The meetings are so arranged that we shall have both formal addresses and informal discussions of the methods and ideas of individual companies, both large and small.

The location of this conference, with its freedom from the distractions of the city (although accessible from all points) permits and encourages intimate group discussions—an interchange of experiences and facts among those who attend.

There will be just enough recreation in golf, tennis and other outdoor activities to maintain the needed social contacts and give relief from formality. And the place is one of the most delightful resorts of the East.

Some of the subjects which will be discussed by experts in gas and appliance sales and in other lines of selling are:

Our Commercial Future.

When We Can Learn from Other Industries.

The A. G. A. Three-Year Sales Plan.

Successful Sales Organization.

The Value of Home Service.

Selling to Women.

National and Local Advertising.

Selling by Mail.

Selling Direct to Consumers.

Sizing Up Your Market.

Building More Gas in Buildings.

Making the Contractor Help You.

The Hardware Dealer and You.

# A Model Home Exhibit to Feature Gas Appliances Recommended to the Eastern States Gas Conference

At the Eastern States Gas Conference the president, Mr. P. S. Young, commended the educational gas exhibits to be conducted in Atlantic City this summer and urged all members to co-operate and promote its success. Mr. L. N. Yetter, commercial manager of the Atlantic City Gas Company, states: "This exhibit is of great importance to the gas industry; we therefore shall be pleased to see as many manufacturers as possible participate."

The above expressions were given after the address of A. Conrad Ekholm, managing director of the National Art and Industry Exposition, Million Dollar Pier, Atlantic City, at the Eastern States Gas Conference in Newark, April 23. Mr. Ekholm stated: "I have an important matter to submit for your consideration. It pertains to educating the public as to the serviceability of gas in the home. It will promote the best interests of those who manufacture gas and those who manufacture gas equipment and appliances. It is a plan which has been tested and found to be most practical. Last year it was tried out in a big way by the electric light industry through the co-operation of the National Electric Light Association and its members and we operated the National Home Electric, the most successful model home electric that has ever been operated in this country. More than 200,000 people actually went through this home and were impressed with its furnishings and equipment.

"At the recommendation of prominent leaders in the gas industry we have decided to feature gas appliances and equipment for our model home, the same as we last year featured electrical appliances and equipments. We will not only show in the home itself everything in the line of practical gas equipment and appliances, but, in an educational exhibit adjacent to the home, we will conduct a comprehensive demonstration under the direction of most competent attendants and lecturers. This will be operated in a way so as to reflect the greatest credit to the gas industry, and of the utmost value to manufacturers, who are offered an opportunity to secure individual national publicity for their line at a very nominal charge. The exposition management supplies competent demonstrators to distribute literature and take leads of interested parties without any cost to exhibitors.

"Our model home again this year will be furnished complete by John Wanamaker, Philadelphia. It is an unusually attractive type of an English bungalow, designed by the same firm of architects, Messrs. Keally & Thomson, of New York City, who designed the national prize winning house which we exhibited last year."

There is an average daily attendance of 25,000 people of a high class coming from all sections of the country who see the exhibits. The exposition opens on July 1 and will continue until September 15.

Any further information will be supplied by addressing Executive Office, National Art and Industry Exposition, Million Dollar Pier, Atlantic City, N. J.

### Coming Association Meetings

Natural Gas Association of America—Pres., John B. Corrin, Pittsburgh, Pa.; sec.-treas., William B. Way, 904-5 Oliver Bldg., Pittsburgh, Pa. Annual meeting May 18, 19, 20, 21, 1925, Atlantic City, N. J.

Gas Sales Association of New England—Gov., J. J. Quinn, Quincy, Mass.; sec.-treas., J. H. Sumner, Cambridge, Mass. Annual meeting, May, 1925, at Boston.

Southern Gas Association—Pres., W. H. Taylor, Atlanta, Ga.; sec.-treas., J. P. Connolly, Charleston, S. C. Annual meeting, June 9, 10, 11, 1925, at Wilmington, N. C.

Industrial Gas Association of New England—Pres., J. W. Howard, Woonsocket, R. I.; sec.-treas., J. H. Summer, Cambridge, Mass. Annual meeting, June, 1925, at Mass. Inst. of Tech., Cambridge, Mass.

Michigan Gas Association—Pres., Chester Grey, Lansing, Mich.; sec.-treas., A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich. Annual meeting at Mackinac Island, June 26, 27, 28.

Canadian Gas Association—Pres., E. R. Hamilton, Halifax, N. S.; sec.-treas., George W. Allen, 7 Astley avenue, Toronto. Annual meeting, July 15 and 16, 1925, at Chateau Frontenac Hotel, Quebec, Canada.

Pacific Coast Gas Association—Pres., E. L. Hall, Portland, Ore.; sec.-treas., Clifford Johnstone, Wells Fargo Bldg., San Francisco, Cal. Annual meeting, September, 1925.

Indiana Gas Association—Pres., Geo. M. Johnson, South Bend; sec.-treas., E. J. Burke, Citizens Gas Co., Indianapolis, Ind. Annual meeting, September 22, 1925, at West Baden.

The Natural Gas and Petroleum Association of Canada—Pres., C. E. Steele, Port Colborne, Ont.; sec.-treas., S. A. Morse, 48½ Market square, Chatham, Ont. Annual meeting in Toronto, Ontario.

West Virginia Oil and Natural Gas Association—Pres., James H. Dye, Charleston, W. Va.; sec.-treas., Edwin Robinson, Fairmont, W. Va. Annual meeting, September, 1925.

Empire State Gas & Electric Association—Pres., M. S. Sloan, Brooklyn, N. Y.; sec., C. H. B. Chapin, 5618 Grand Central Terminal, New York. Annual meeting, first week in October, 1925, Lake Placid, N. Y.

American Gas Association—Pres., H. C. Abell, New York; sec.-mgr., Alexander Forward, 342 Madison avenue, New York. Annual meeting, October, 1925, at Atlantic City, N. J.

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### Improved Substitute for Silica Sectional Retorts

The Parker-Russell Mining & Mfg. Co., of St. Louis, announce that they have perfected a retort made of their Parco material which overcomes the objectionable features encountered when using silica sectional retorts.

They state that up to 20 years ago all gas retorts were made of fire clay. Fire clay had limitations as to temperature and when a greater yield of gas was demanded a substitute for fire clay retorts was found in silica sectional retorts. Silica withstood high temperatures and was a very good conductor of heat. The material was so brittle, however, that the retorts had to be built with small sectional pieces. Silica sectional retorts developed several weak points, due to certain characteristics of the material. One of the weak points hardest to deal with is the expansion of silica materials. This has to be provided for carefully in building the retorts, but no matter how much care is used this expansion elongates the retorts, pushes out the front of the benches and causes the sections to loosen and tend to fall out of place. This tendency is aggravated in the through retorts when the charges stick or jam and extra pressure has to be applied on the discharging ram. This causes an internal pressure in the retort, tending to push the sections out of place, and as a result holes are left in the retort. It is almost impossible to repair a hole in a retort where two or more sections have fallen out and the retort must be blanked off. Top rows of retorts are particularly subject to this trouble as it is hard to provide weight or pressure enough to keep the blocks from pushing up.

This company, after years of study, has developed a material which it brands "Parco." This material is being used for making retorts in the same manner as fire clay formerly was used.

Complete retorts for stop end benches are made in one piece and for through benches in three pieces. The advantage of reducing the number of pieces in a retort to such a simple design is manifest. The silica retorts had ten sections in the complete circumference of the retort and each section is only about 16 inches long. In other words, a 20 ft. retort would have approximately 150 silica sections, whereas a Parco retort would have only three sections.

There is no expansion to Parco material and therefore no bracing is necessary on the front walls except that necessary for supporting the mouthpieces.

Parco material is highly refractory, withstanding temperatures of over 3,400 degrees F. before fusing. It likewise has wonderful properties for carrying loads under heat. The most important property of Parco material is the fact that it is not affected by impurities in the coal, whereas these same impurities cause silica to disintegrate.

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### "Quality" Gas Ranges on West Coast

In line with their policy of general expansion, the Roberts & Mander Stove Company, Philadelphia, Pa., manufacturers of the well-known "Quality" gas ranges, have for some time past maintained a sales office and warehouse at 324 N. San Pedro street, Los Angeles, Cal.

The activities of the Western branch office are under the direction of Mr. R. Lockwood Moss, who is well known to the trade in that section of the country.